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DIESEL RAILWAY TRACTION

A Supplement illustrating and describing developments in Diesel Railway Traction is presented with every copy of this week's issue

"Square Deal" Developments

THE special committee of the Transport Advisory Council has been busily engaged this week in preparing its report and recommendations for submission to the council. The work is being pressed forward rapidly but at the moment the date of its completion is uncertain. In the meantime steps are being taken to implement that portion of the road-rail agreement which relates to the setting up of a joint consultative committee representing both road hauliers and railway companies. It is proposed that the committee shall consist of eight road representatives and eight railway representatives. The railway companies have nominated as their representatives Mr. A. E. Sewell, Goods Manager, Scotland, and Mr. A. J. Forbes Smith, Assistant to the Chief General Manager, L.N.E.R.; Mr. D. C. McCulloch, Assistant to the Chief Commercial Manager, Mr. W. Yeaman, Commercial Manager, Scotland, L.M.S.R.; Mr. F. C. A. Coventry, Road Transport Superintendent, Mr. H. W. Payne, Principal Assistant to the Chief Goods Manager, G.W.R.; and Mr. W. M. Perts, Commercial Superintendent and Mr. J. C. Chambers, Road Transport Liaison Officer, Southern Railway. The nominations on behalf of the road transport organisations have not yet been announced. The immediate task of the committee will be to consider and formulate the principles on which voluntary agreements can be entered into with regard to the rates to be charged by road and rail for merchandise traffic, either generally or in respect of particular commodities or particular routes or areas. It will also arrange for the appointment of regional committees and define their duties and responsibilities.

* * * *

Railways and Political Changes

Although it is too early to assess with precision the effect on European railways of the week's political events, it is clear that the declaration on Tuesday of Slovak independence marked the end of the composite Czecho-Slovak State, and with it the dissolution of the Czecho-Slovak State Railways Administration. Apparently both Czechei and Slovakia are destined to become German protectorates, but no opinion can yet be formed as to their ultimate respective degrees of internal autonomy. The most recent political change affecting railways, apart from the Czecho-Slovak severance, was the recognition of General Franco's administration as the Government of Spain, which took place on February 28. In consequence of this recognition it followed that Great Britain also recognised the many Decrees relating to railways promulgated by him as Spanish law. One of the most important was that dated March 12, 1938, authorising the wholesale provision of rolling stock, permanent way, and other equipment for rehabilitation purposes, and modifying earlier Decrees in certain respects. The fact of recognition and the new political situation in Spain should stimulate the measures necessary to comply with this Decree, make financial dealings easier, and improve the chances of foreign firms in obtaining contracts in that country.

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The Week's Traffics

Passenger train traffics contribute £14,000, merchandise £53,500, and coal £18,500 to the total decrease of £86,000 shown by the four group companies in comparison with the corresponding week of last year, when an increase of £33,000 over the 10th week of 1937 was recorded. For the 9th week of 1939 the decrease was £98,000. Total receipts of the four companies for the ten weeks of the current year amount to £27,484,000, a decrease of £1,672,000 or 5·73 per cent. in comparison with 1938.

	10th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	– 6,000	– 30,000	– 8,000	– 44,000	– 687,000	– 5·80
L.N.E.R. ..	– 6,000	– 21,000	– 1,000	– 28,000	– 647,000	– 7·32
G.W.R. ..	– 1,000	– —	– 6,000	– 7,000	– 279,000	– 5·70
S.R.	– 1,000	– 2,500	– 3,500	– 7,000	– 59,000	– 1·65

Mersey Railway receipts for the past week were up £48, and the improvement for the ten weeks is £1,015. Great Northern (Ireland) takings for the year to date show increases of £1,250 from passengers and of £9,650 from goods.

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To All Metropolitan Line Passengers

London Transport has issued for the information of regular travellers on the Metropolitan Line a free pocket booklet explaining the purpose of the engineering works in progress on that section. Lineside notices have for some time briefly stated what is being done, and from time to time articles have appeared in the press describing the completion of stages in the scheme. The value of the new official booklet is that it surveys the whole project in a convenient space, explaining not only the forthcoming through running between the Metropolitan and the Bakerloo lines, but—what has hitherto received less attention—the necessity of widening the Metropolitan & Great Central Joint line so that it can carry a service

appropriate in frequency and regularity to the populous district it serves. The grumbles of those who are suspicious of change, and grudge the transitory inconvenience sometimes attendant upon bringing it about, are politely anticipated and countered. In this respect the booklet has a precedent in the pamphlet, "Why Waterloo Trains are Running Late" distributed to Southern Railway suburban passengers during the improvements to the Waterloo approach.

* * * *

Derwent Valley Light Railway

This single-line standard-gauge railway of 16 miles which links up with the L.N.E.R. at York and Cliff Common, has no regular passenger service, although parcels and mails are carried and excursion trains are run during the summer months when required. The tonnage of goods traffic in 1938 amounted to 52,979 tons, against 51,403 tons in 1937. Higher class merchandise and coal class traffic improved both in tonnage and receipts, but there was a falling off in classes 1 to 6 and in livestock. The operating ratio improved from 87·25 per cent. to 78·50 per cent.

	1937	1938
	£	£
Passenger train receipts ..	95	80
Goods train receipts	6,742	7,168
Total receipts	6,895	7,311
Expenditure	6,016	5,739
Net railway receipts	879	1,572
Net revenue	1,372	1,785

Collection and delivery of parcels and goods, as to which no figures for 1937 were published, show a loss of £223 in the 1938 accounts. Passengers carried in 1938 were 474, against 278 in 1937. Train-miles run during 1938 were 102 coaching and 10,476 goods, comparing with 39 and 10,828, respectively, in 1937.

* * * *

Progress of the Baghdad Railway

It may be remembered that the Aleppo—Nisibin section of the Baghdad Railway was extended from Tel-Zionane to the Syrian-Iraq frontier at Tel-Kotchek at the end of 1934 and that the Taurus Express ran into Tel-Kotchek for the first time on May 16, 1935, as recorded in our issue of May 17 of that year. Work has been going on steadily since that time and the line has now been extended into Iraq territory as far as Sabuniyah not far short of Mosul. An important stage in the progress of this great enterprise will be the opening of the line to Mosul, which event, according to Mr. S. G. Gilmour, writing in *The Traveller's Gazette*, is expected to take place about the end of this month. This will leave only the 120-mile Mosul—Baiji section to be completed to enable trains to run from Haidar Pacha into Baghdad, and of this the formation exists and was in use during the war from Baiji to Shargat. The first 15 miles of line south of Mosul are under construction in difficult country, and a mile-long tunnel is in hand. The next 30 miles to Qaiyarah are easier, and the last 75 miles very easy, so that it is hoped to open the line throughout by October next or at any rate within the next twelve months.

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The Revenues of London Transport

The problem of paying dividends on the "C" stock of the London Passenger Transport Board was one of the points which were discussed at the Institute of Transport on March 13 by Mr. Frank Pick, Vice-Chairman of the board. An abstract of Mr. Pick's address appears on page 477. Mr. Pick said that the revenues of the board had to cover working expenses, reserves, prior charges, and eventually interest on the "C" stock, which corresponded to ordinary issues. These shares became converted into a fixed interest stock, to vary between an ultimate standard rate of 5½ per cent. and the maximum permissible rate of 6 per cent. The return over the first five years had been, with minor variations, 4 per cent. A fall of one per cent. in gross receipts might result in a fall of more than one per cent. in interest on the "C" stock. The fortunes of the board turned on fine margins of receipts, and its day to day decisions on expenditure had to be coloured by its week to week receipts. He discussed the need for a reserve fund of moderate but adequate dimensions to support a given rate of interest on the "C" stock. To effect this would mean an amendment of the Act of 1933 to revise the disposition of the board's resources after the prior charges had been fully met. When the present programme of new works was completed, there would be a demand for more, but the board could not proceed until its financial position had been made secure, until it could pick up the financial burdens to arise from the new works now in execution and enjoy a margin of receipts sufficient to justify a further venture. The proposed fare increases would certainly not, as some alleged, make the charges burdensome; the effective rate of charge for ordinary passengers would not exceed a penny a mile.

* * * *

Chester: The Key to North Wales

In very early years Chester assumed the position of focal point in the transport services to North Wales and has retained that position to the present time. Through Chester pass not only all the L.M.S.R. trains from the Crewe, Manchester, and Liverpool directions to the North Wales coast, but also numerous G.W.R. services from Shrewsbury and the South and from the Chester & Warrington Joint Line. From midnight to midnight on an ordinary day in winter the number of passenger trains dealt with at Chester station is about 280, but, as is pointed out in the current issue of *On Time*, the maximum use of the station is made on the Saturday preceding August Bank Holiday; on that day of last year, for example, no fewer than 482 trains were dealt with in 24 hours. The L.M.S.R. Chester motive power shed, which is the main depot for the Chester motive power district, has an allocation of 39 engines and a winter weekly mileage of nearly 26,000. Although Chester is not a large-scale industrial city, it has important works which manufacture electrical switchgear, steel window casements, and lead, and it also deals with substantial quantities of feeding stuffs and nurserymen's products. Over 111,000 tons of goods and mineral traffic were dealt with by the Chester goods department during 1938. The cartage staff comprises 52 horse-drawn and four motor vehicles which between them dealt last year with over 34,000 tons. Chester is also a transhipping station for "smalls" traffic for North Wales, and during 1938 the tonnage of this traffic accounted for nearly 65,000 tons of the total of 111,000 tons already mentioned.

* * * *

Locomotive History in Models

From time to time fresh claims are made for the preservation, on historic grounds, of famous locomotives, but the increasing number of engines which it is desired to preserve raises serious difficulties. One is the value of the material in each locomotive preserved; another is the care of the collection; and the third is the considerable difficulty of finding suitable accommodation for such large exhibits in a place to which public access is reasonably easy. The whole problem might be solved with relative

simplicity were it possible to inaugurate a collection of scale model locomotives such, for example, as that found in the German Railway Museum at Nuremberg. The same idea, as was stated in our issue of May 20 last, finds a supporter in Mr. G. F. Westcott, Keeper of the Land Transport Section of our own Science Museum, South Kensington. This is a matter in which the various large societies of railway amateurs in Great Britain, severally or jointly, might well interest themselves. There are, for example, a number of model railway clubs, which annually display the products of their constructive skill; there are numerous firms which specialise in the building of model locomotives; there are influential societies which interest themselves in locomotives, in railway history, and in railway observation. What is needed is concerted action, by a representative committee or otherwise, with the help of the railways themselves, to assure the nucleus of a collection of models, preferably, but not essentially, to the same scale; and we believe that if this were assured, the matter of suitable housing would not present an insuperable difficulty.

* * * *

American Speed Competition

A recrudescence of the competition which produced the remarkable high-speed train service between Chicago and the Twin Cities of St. Paul and Minneapolis is seen in two recent developments. The Milwaukee Company, which hitherto has been content with its one daily steam-hauled streamliner, the famous Hiawatha—a train considerably expanded in seating capacity since its first introduction—has now doubled its service and is running morning and evening Hiawatha trains in each direction, in 6½ hr. for the 410 miles. The eastbound morning Hiawatha now makes the fastest run in the world with steam power by covering the 78·3 miles from Sparta to Portage in 63 min., at 74·6 m.p.h. The Burlington, which began with one three-car Zephyr diesel unit, but for a considerable time past has needed two seven-car units in each direction daily to cope with the traffic, has from the beginning of February cut the time of its Morning Zephyr each way to 6¼ hr. for the 431 miles between Chicago and St. Paul, stops included, instead of the 6½ hr. which has hitherto been the minimum travelling time by each route. Then the Chicago & North Western, which by using standard coaches and steam locomotives and so not spending time in building special equipment, was actually the first in the field by a few months with The 400, is building new diesel high-speed units for its Chicago—Twin Cities service; the C. & N.W. distance of 396 miles is the shortest of the three. The traffic-creating properties of high speed are demonstrated by the financial success of these competing trains, and by the necessity for continuous expansion of the service.

* * * *

The Rheingold Express

From the details of European train service alterations described on page 479 of this issue it is seen that the extension of the Rheingold Express to and from Milan, which, as announced in our issue of November 4, 1938, is to become effective from May 15 next, will have a wider scope than the linking of Holland and the Rhineland towns with North Italy. A new high-speed diesel service is planned between Berlin and Basle, connecting with the Rheingold, which for the first time on record will make it possible to cover the 720 miles between Berlin and Milan without overnight travel, and will introduce the hitherto unprecedented journey time of 15 hr. between the two cities. It is a compliment to Switzerland that the Gotthard route should be chosen to make this fast journey possible, rather than the shorter though more difficult route *via* Nuremberg, Munich, the Brenner, and Verona, which would have kept the service entirely within German and Italian territory. The extension of the Rheingold Express through Switzerland will also be of direct interest to British travellers, as it will make possible a journey between London and Milan of which the night portion will be comfortably spent on the Harwich—Hook of Holland steamer, and the day will offer the almost continuous scenic attraction of the Rhine *plus* the Gotthard route through Switzerland, without change of carriage.

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" Experimental " Locomotives

An " experimental " locomotive, in order to justify the term in present circumstances, must be something more than merely a type new to the railway for which it is built, but already well tried on many others. Such engines as No. 10000 of the L.N.E.R., as originally built, could genuinely be regarded as experimental, even when it was taken into account that prior use had been made on railways at home and abroad of some of its special features. In a sense also any locomotive driven by turbines can be placed in the same category, as there is at present no design accepted as standard, at all events outside Sweden. In that country more locomotives of this description are in regular, though restricted, use than elsewhere, but the position has not been reached when the term " experimental " is robbed of its meaning. It has been applied to locomotives which, although in themselves of orthodox design in respect of boiler, wheel arrangement, cylinders, and driving mechanism, differ from others in that they are more lavishly equipped. They are experimental to the extent that they incorporate among their appurtenances feedwater heating apparatus, ball and roller bearing big ends, motion details, and axleboxes, electric lighting, and poppet valves; such details may be supplemented by thermic syphons, special front end fittings, and numerous additional fitments, all more or less well tried but not as yet assembled in any British-built locomotive for home service.

* * * *

Measure for Measure

If what we read is true, the large and rotund traveller in Hungary has, paradoxically, a thin time, for we gather that those whose frames, in subjection to Nature's inexorable laws, have adopted the spread-over, are forced to squander their girth-right by paying a *pro corporatione* tax whenever they buy a ticket; the resultant revenue presumably figures under " grosser passenger receipts," and while his losses on the swings have not been made public, it is very obvious that the wily Magyar makes a pretty pengo on the roundabouts. Such a scheme has its possibilities, and we can visualise the sublime spectacle of British holiday-makers, who are either palpably out-of-gauge or only border-line cases, being gently removed from the booking-office queue to undergo ordeal by tape-measure before entraining. Nevertheless, incommoded though we may be at times through having our travelling neighbour's greatness thrust upon us, we incline to the more humane view that what is overdone in these instances cannot be helped, and that it is not so much corporal breadth as mental exiguity that requires penalising. Let our transport authorities initiate a campaign for " stinging " such space and time abusers as the corridor obstructionist, the would-be compartment monopoliser, the violators of rules and etiquette, the laggards, the ditherers, and the purblind, and we shall be the first to applaud their enterprise, and to greet the success thereof with a Hungarian rhapsody.

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Travel Comfort

IN its broadest sense, and after the actual business of reaching his destination, comfort is the thing that matters most to the passenger in any vehicle. Indeed, the knowledge that such an attainment is certain is one part of the whole scheme of travel comfort. Comfort in travel was the subject of three papers read at a meeting organised by the Institution of Automobile Engineers, at the Institution of Civil Engineers on March 10. Mr. Sidney E. Garcke, Executive Director of the British Electric Traction Co. Ltd., dealt with comfort by road. After a summary of the history of mechanical transport by road, Mr. Garcke discussed the distinctions of mental comfort and bodily comfort. The former, whatever the means of conveyance, depends on a sense of security, and trust in the reliability of the vehicle and its operators. Factors contributing to the latter involve the design of the vehicle and the way over which it passes, as well as provision for the physical needs of the passenger, such as proper facilities for food and rest along the road. Then there is the difference between what the travelling public needs, and what it thinks it needs. The speaker tilted at false suggestions of "luxury," such as those ridiculous little silk curtains on long-distance buses, which give a spurious suggestion of richness, but which actually decrease the amount of window space. They are quite useless, for they do not draw across the windows. "The interesting point," he said, "is that in the experienced view of the bus companies, this reduction of physical convenience and comfort is more than compensated by the suggestion of a luxury comparable with the private limousine, and by its snobbish psychological appeal to those potential passengers who do not own private cars." Exactly the same thing is responsible for the inconvenient shape of the modern small private car itself. One kind of comfort is the feeling that you are smart and fashionable, and it may well outweigh a lack of head and leg room. Vehicle seats are too often designed for appearance rather than for perfect bodily ease, and in the words of Mr. Garcke, too many seats have been devised on the assumption that passengers will be sitting in a stationary vehicle. Springing, angle of seat and back, heating, ventilation, the course and surface of the road itself are all-important in the work of keeping the passenger at ease and eliminating travel sickness.

The paper on rail comfort was by Lord Stamp, and he too emphasised the distinctions of bodily comfort and mental comfort. The railway vehicle, as compared with the bus, has the advantage of greater roominess and all the additional amenities which this brings in its wake. As to mental comfort, while admitting Lord Stamp's claims on the considerable elimination of worry from railway travelling, it must still be admitted that the passenger cannot yet feel confident that the contract to convey him according to the timetable will be kept. It must be confessed, too, that not all long distance trains are as clean as most long distance buses. When Lord Stamp says: "There has been a great advance in adequate and clean lavatory accommodation, and there are few journeys of any length in which absence of this facility can give any cause for anxiety," we feel that there should be no such journeys on British railways. Indeed, among the great railway countries, Britain alone errs in this respect. Lord Stamp paid considerable attention to the factors of noise, heating and ventilation, all of which are largely disposed of by the completely air-conditioned, sealed coaches of American express trains. Air-conditioning is a less vital necessity in Great Britain, where climatic extremes are milder, and where the window under the passenger's control dies hard. A considerable amount may be done by permanent way improvements and the partial air-conditioning as in some of the latest British trains, in eliminating noise, as well as unsteady running in the one connection and draught or stuffiness in the other. Artificial lighting of vehicles has gone far, even since the days when two bulbs, contained by a globe in the middle of the ceiling, constituted the latest thing in modernity.

Captain E. W. Percival, Managing Director and Chief Designer to Percival Aircraft Limited, treated of comfort by air. In some ways the aeroplane is in a different world from that of the train and the bus, in others it has a marked affinity to them. Air being a natural cushion, an aeroplane is not afflicted by the vibrations set up by road surfaces and rail joints. Passenger comfort is a very new thing in aeroplane design. Most of us remember when it was as much as could be done to get the thing off the ground, while the pilot, and his passenger if any, had to perch themselves as best they could on next to nothing. Capt. Percival's paper very pronouncedly showed the importance of ventilation as well as seating; an aeroplane provides the acid test. As recently as 1932 nearly 60 per cent. of the passengers were sick in the course of steep climbs from airfields close to the Rocky Mountains. This proportion, as a sole result of improved ventilation, has now been reduced to 2 per cent. The adjustable chairs in the modern "Empire" class flying boats are probably the most comfortable vehicle seats ever devised. Unfortunately, such seats are not yet known on British trains, and although our third class carriages are as a whole more comfortable than they used to be, still we cannot say the same about the first class seating, which, with a few notable exceptions, seems to be static.

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Palestine Railways

THE Palestine Railways Administration operates 1,003 route-kilometres (625 route-miles) of line, of which 536 km. are of standard gauge, and 467 of 105 cm. gauge. The Rafa—Haifa, and Jaffa—Jerusalem lines, 333 km. of standard gauge, are in Palestine proper and are owned by the Government of Palestine. The remaining 203 km. of standard gauge constitute the Kantara (Suez Canal)—Rafa line which is in Sinai and is the property of the British Government. The narrow-gauge lines are those making up the 467 km. of the Hedjaz Railway, of which 144 km. are in Palestine and 323 km. in Trans-Jordan, and the connecting link between the two sections is operated by the Syrian authorities. During the year ended March 31, 1938, on which we have received the report* by Mr. C. R. Webb, the General Manager, from the Crown Agents for the Colonies, the railways suffered severely from the effects of the political situation following the disturbances of 1936. With the re-opening of Jaffa Port and the completion of the harbour at Tel Aviv, the Palestine Railway lost a considerable amount of traffic which it had been carrying for some years. In addition, severe road competition resulted from the opening in September, 1937, of a road from Jaffa and Tel Aviv to Haifa. Sabotage started again in October, 1937, and as a result all-night running was suspended for a short time, but it was necessary again to run a night goods train service to deal with the heavy citrus traffic, which necessitated the constant patrol of the line in front of and between trains by armoured motor trolleys. This particular traffic was not seriously affected by the new road. Some 450,000 cases came to Haifa Port by road against about 5,805,000 carried by rail, but even this comparatively small amount of transport by road of low-rated traffic brought to the port lorries which returned with more highly-freighted imports.

* Obtainable from the Crown Agents for the Colonies, 4, Millbank, S.W. 1. Price 3s net.

Working results of the three main sections are compared in the following table:—

	1936-37	1937-38	Inc. or Dec. in 1937-38
Palestine Railway	£P.	£P.	£P.
Gross receipts	716,754	478,953	— 237,801
Working expenditure	456,459	459,931	+ 3,742
Net receipts	260,295	19,022	— 241,273
Kantara-Rafa Railway			
Gross receipts	180,945	109,507	— 71,438
Working expenditure	144,601	109,435	— 35,166
Net receipts	36,344	72	— 36,272
Hedjaz Railway			
Gross receipts	101,400	80,930	— 20,470
Working expenditure	113,143	119,587	+ 6,444
Net receipts	Dr. 11,743	Dr. 38,657	— 26,914

On the Kantara—Rafa Railway there was a heavy military traffic in 1936-37 necessitated by the disturbances, and the reduction of this traffic in 1937-38 was the principal reason for the decrease in receipts. The reduction in expenditure was chiefly due to the very much smaller contribution to the special fund following the fall in revenue. Some of the local night services on the Hedjaz Railway had to be cancelled, and the fall in revenue was £6,744 in passenger traffic and £12,899 in goods traffic. The increase in working expenditure was incurred mainly in overtaking arrears of maintenance of locomotives and rolling stock. Increased cost of materials and coal also added to the expenses. The new Haifa Central station, built on land reclaimed from the sea during the construction of the new harbour was opened to the public on June 1, 1938

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The Rhodesia Railway Commission

THE eleventh annual report of the Railway Commission of Southern Rhodesia, Northern Rhodesia, and the Bechuanaland Protectorate, covers the fifteen months October, 1937, to December, 1938, in order to include the proposed schedule of charges and estimates for the year 1938-39. This is the second report since the amalgamation of the Rhodesia and Mashonaland Railways, the financial changes involved in which were referred to in THE RAILWAY GAZETTE of February 11, 1938. The accounts of Rhodesia Railways Limited for the year 1936-37 are now presented. During the year 1936-37 the trade prosperity of the territories was at a high level. Operating revenue exceeded that of the preceding year by no less than £1,088,629 (29·84 per cent.), the increase being spread over all heads of traffic. Passenger receipts were higher by £46,686 (11·9 per cent.), general merchandise by £394,380 (23·5 per cent.), and minerals by £634,945 (46·8 per cent.). Operating expenditure (including provision for depreciation and renewals) was higher by £228,651, or 9·88 per cent. Average net train-load was slightly lower at 276 tons, and net ton-miles per train engine-hour were also less, at 4,598. The working statistics compare as follows with the preceding period:—

	1935–36	1936–37
	£	£
Coaching receipts	390,829	437,515
General merchandise receipts	1,678,389	2,072,769
Mineral receipts	1,357,528	1,992,473
Gross earnings	3,647,615	4,736,244
Expenditure	1,789,913	2,019,941
Depreciation and renewals	522,725	521,348
Surplus	1,334,977	2,194,955

Deducting various first charges, of which the principal were income tax, £287,276, and pensions liability account, £146,604; and adding £218,269 for interest receivable, £57,015 for profit on sale of investments and certain other credits, the realised income was £1,926,947 (against £1,194,584 in 1935-36) appropriated as follows: £1,010,175 to loan service, £150,000 for reserve account, and £53,084 for rates stabilisation account, leaving £713,688 to be carried to reserve account in addition to the aforesaid statutory amount. The three Governments had signified their approval of the charge of £728,820 to net revenue account in connection with the conversion of former debentures of the Rhodesia Railways. As the amount standing to the credit of the reserve account is more than twice the loan provision of £1,100,700, the restriction imposed by the Statute on the reduction in charges has ceased to be operative for the present and reductions have been approved by the Commission to take effect from January 1, 1939. These are set out in an annexure to the report. The alterations also provide for the abolition of the surcharges approved in 1932.

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War-Time Transport

IN the House of Commons on March 2 the Minister of Transport reviewed briefly the arrangements contemplated by the Government to meet the tremendous demands which would be made on the transport facilities of the country should an emergency arise. Thus, while mobilisation would bring immediate and heavy transport responsibilities, this was only part of the problem, as, concurrently, the tremendous task of evacuating vast numbers of the civil population, the movement of munitions and fuel, the transfer of food, and the carrying on of the essential business of the country would tax the transport facilities to the utmost. Beginning with the important question of feeding the population, the Minister stated that of the 285 separate docks and harbours in the country, 45 had been treated as the principal docks and harbours and in each of them a port and harbour transit emergency committee had been constituted to consider the arrangements necessary for preventing congestion occurring during war, when abnormally large shipments would have to be dealt with. Their activities had covered such matters as cranage facilities, haulage, and warehousing arrangements, both at the port and inland. These ports would, of course, be subject to the risk of enemy attack by air or sea, and accordingly the Government is taking steps not merely to protect the personnel, but also to ensure that, in such circumstances, the essential services of the ports remain operative. Electricity is essential to the operation of modern port equipment and the Government has arranged for a national pool of essential switchgear, transformers, and other material so that, in the event of a generating station being put out of action, the affected region could speedily be linked up with another station.

Turning to railways, the Minister gave some indication of the steps which have been taken to keep what he described as " the iron backbone of the country " available for the tremendous strain to which it would be subjected immediately there were an outbreak of war. To protect this essential part of the defence of the country an expenditure of some millions of pounds is necessary, and he intimated that the necessary work was actively in hand, leaving the actual division of the cost as between the Government and the railway companies for determination at a later date. A large amount of the necessary work has already been accomplished in connection with the pooling of breakdown trains, and the acquisition of reserves of stores and materials to facilitate repairs in vulnerable areas. Other costly measures are actively in progress for the purpose of keeping the traffic moving during any such period of emergency. So far as the evacuation of the civilian population from London is concerned, the Minister indicated that it was not proposed to use the main-line terminal stations, but places on the periphery of the city. He

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then stressed the difference between the railways and road transport. The former, with unlimited supplies of coal at their disposal, could formulate plans with the knowledge that nothing short of a complete breakdown by reason of enemy action could stop them functioning. Road transport, on the other hand, was completely dependent upon imported fuel and it was quite certain that there would not be sufficient to meet requirements; consequently petrol would in all probability have to be rationed severely. It would be impossible to secure economic use of the restricted supplies if the existing 500,000 road haulage vehicles were allowed to continue to function under existing 200,000 owners. The country had therefore been divided into regions, each under the chairmanship of the traffic commissioners. These regions had been sub-divided in turn into districts and sub-districts, and arrangements made for the various classes of vehicles in these districts to be grouped. Petrol would be issued only to these groups, and those in charge would be responsible for ensuring that the vehicles were used in the most economical manner. Arrangements have also been made to maintain a supply of material in order to strengthen existing bridges, where desirable, and for rebuilding parapets and roadways which might be damaged by enemy action.

* * * *

South African Locomotive Statistics

THE recently-issued report of the General Manager of the South African Railways & Harbours for the year ended March 31, 1938, contains, as is usual, some interesting statistical matter concerning the locomotive stock on that system. At March 31, 1938, there were 2,019 locomotives of 3-ft. 6-in. gauge and 63 of 2-ft. gauge in service, as against 2,011 of the larger and 64 of the smaller gauge at the close of the preceding year. Fifty-one standard gauge and two narrow gauge engines were placed in service during the year, and the total tractive force of these 53 new locomotives is 1,838,130 lb. Steam locomotives withdrawn from service, including 11 sold to private firms, represented a tractive effort of 985,756 lb., so that there was an increase of 852,374 lb. in the tractive effort of the steam locomotive stock at the close of the year, compared with the position at March 31, 1937. The figures given in the table following reflect the aggregate and average tractive effort of 3-ft. 6-in. gauge steam locomotives in service at the close of a number of years since 1911, as well as the comparative position in respect of the each preceding year:—

Year	Aggregate tractive force	Increase or decrease compared with previous year	Average tractive force	Increase compared with previous year
	Lb.	Lb.	Lb.	Lb.
1911 ..	28,798,144	—	20,673	—
1917-18 ..	36,517,512	+ 629,720	23,977	163
1924-25 ..	46,225,631	+ 203,130	25,724	99
1928-29 ..	56,541,584	+ 3,605,935	27,662	585
1932-33 ..	59,145,012	— 639,502	28,627	22
1936-37 ..	59,534,821	+ 312,130	29,604	257
1937-38 ..	60,367,811	+ 832,990	29,900	296

The above figures do not take into account the tractive force of electric units, and a comparison between the position in 1911 and that at the close of 1937 would therefore give an accurate rendering of the progress made since Union. The policy of scrapping old and obsolete engines is still being actively pursued, and with the placing in service of more powerful new types the average tractive effort should be appreciably increased during the course of the next few years. The average tractive force of the 51 standard gauge engines previously referred to, the greater proportion of which were designed for branch line working, is 35,303 lb., or 5,403 lb. more than the average for all standard gauge locomotives at March 31, 1937, and nearly double that of such locomotives in 1911. In that year the average weight per 3-ft. 6-in. gauge locomotive on the South African Railways was 52·16 tons, and with one exception this figure has increased progressively during the ensuing twenty-seven years until at March 31, 1938, the average weight was 89·65 tons. At the close of the year 315 steam locomotives, 69 electric units, and 2 diesel-electric shunting locomotives were on order.

The number of steam locomotives under or awaiting repairs at the various mechanical workshops on the system during the year was 5·28 per cent. of the total in service, whilst for the workshops and running sheds combined the percentage was 11·90. The following statement reflecting the repair position during the past twelve years indicates that satisfactory improvement has been achieved during recent years, especially in the case of workshop repairs:—

Year	Average percentage of locomotives under or waiting repairs at :—	
	Workshops	Workshops and running sheds combined
1926-27	13·1	17·8
1927-28	12·3	17·6
1928-29	11·4	17·0
1929-30	10·9	16·4
1930-31	9·99	15·5
1931-32	8·24	13·5
1932-33	8·04	13·2
1933-34	9·38	14·54
1934-35	7·48	14·19
1935-36	6·73	12·28
1936-37	5·38	10·89
1937-38	5·28	11·90

Compared with 1936-37 one steam locomotive fewer was dealt with during the year under review, the figures being 1,097 and 1,096 respectively. In the case of electric locomotives, 298 repairs were effected as against 190 in 1936-37. The average number of days steam locomotives were actually under repair in the workshops was:—

Nature of repairs	1937–38	1936–37
Heavy	27	25
Intermediate	24	23
Light	8	9

The increase over the previous year, 1936-37, is attributed to the large number of bigger locomotives which had to be dealt with as a result of the withdrawal of older types from service. As an adjunct to the above purely locomotive matters, references are made in the report to the operations at the various workshops of the South African Railways system. It is stated that at the Salt River works, in order not to retard ordinary repair work, overtime had to be resorted to in connection with the erection of new locomotives, of which 31 were built. One hundred and fifty-one engines received attention, of which number 130 were heavy, 19 light, and 2 intermediate repairs. During the period under review, repairs were effected to 142 boilers, 24 of which were fitted with new fireboxes. Fifteen new boilers were built, while 17 standard boilers were in course of construction. New machinery and appliances were laid down, both at these works and at those at Durban. At the latter, 135 locomotives, or three more than last year, were dealt with for heavy repairs, while heavy coach repairs increased from 168 to 192 and wagon repairs from 2,145 to 2,192. Similarly at the other shops, *i.e.*, those at Bloemfontein, Pietermaritzburg, Uitenhage and East London, the demands for engines and rolling stock were satisfactorily met, although, as the report states, considerable overtime had to be incurred in order that this might be achieved.

PUBLICATIONS RECEIVED

The Railway Crisis—The Problem and its Solution.—Frequent reference has been made in the course of the "square deal" campaign to the out-of-date legislation with which the railways are handicapped. This booklet, issued free by the Railway Companies' Association, Fielden House, Great College Street, S.W.1, reviews the birth and development of legislative restrictions from the settlement of the maximum charging powers for the Surrey Iron Railway in 1803, up to the elaborate technique of rate control implicit in the Railways Act of 1921. The various steps in the railway companies' claim for relief and the response thereto by the Minister of Transport and the Transport Advisory Council are then enumerated, with the valuable addition of an appendix giving the full text of the memoranda and statements explaining the railway companies' proposals. A section of the booklet entitled "Railways in the National Economy" quotes figures showing how net revenues have failed to approach the standard revenue, and demonstrating that the loss of freight traffic to the roads is the factor which has prevented the companies from sharing in the benefits of increased business activity in Great Britain.

Facts About British Railways, 1939. London: Issued by the British Railways Press Office, 2, Caxton Street, Westminster, S.W.1, on behalf of the G.W.R., L.N.E.R., L.M.S.R., and Southern Railway Companies. 6¼ in. × 4 in. 32 pp. Gratis.—The facts referred to in the title of this booklet are selected to illustrate the varied nature of the transport facilities offered by the railways day in and day out. Whether it is speed for the passenger or carriage for an awkward and fragile piece of merchandise, the railways can provide it, and the statistics in "Facts About British Railways" show the resources they can draw upon for the purpose. For example, the current winter timetables offer 110 daily express trains scheduled at 60 m.p.h. and over for all or part of their journeys; every day 678 express freight trains are run, and 50,000 special wagons are available for the transport of loads out of the ordinary. Locomotives, track and signals, and electrification are subjects dealt with similarly to train services and equipment, offering an array of significant facts invaluable to any member of the public wishing to indulge in argument upon the subject of railway transport. Railway purchases and railway employment are treated in a manner that presents within the compass of two pages a well-documented exposition of the importance of the systems to the life of the country. In comparison with this the tables of statistical and financial results for 1938 seem a sad picture of neglected resources. The "square deal" is not laboured, but the urgency of it is briefly touched upon in a foreword by Sir James Milne, contributed in his capacity as Chairman of the General Managers' Conference for 1939. An appeal to the public to spread their holidays over the earlier and later summer months is made at the end of the book. The customary folding railway map showing the routes of the principal named expresses is again included.

Ride with me on the "Early Bird."—So long as it inspires booklets as readable as the one under review, some will wish for the railway companies' campaign for a "square deal" to be long protracted. The "Early Bird" is the G.W.R. express freight train that leaves Acton every night at 7.25 p.m. for South Wales, and this is the account of a ride to Cardiff in the guard's brake van and on the engine. Much general information on the working of express goods services emerges from the conversation between the anonymous author and the guard, but woven into the narrative so that it is absorbed without spoiling the impression of a night ride with informative companions. Two of the railwaymen give their views on the "square deal," lamenting the decline in goods traffic. This paves the way for a concluding homily on what the railways need to regain their prosperity, and an outline of what is likely to happen if Parliament does not see its way to passing the requisite legislation. Nearly every page in the booklet is illustrated with night scenes in the goods depot, on the engine, in the guard's van, and so on. This free publication of the Railway Companies' Association, Fielden House, Great College Street, S.W.1, is to be recommended to all who wish to look behind the façade of the "square deal" campaign and learn what the railways do as well as what they ask.

"Holidays by L.M.S."—Such a diversity of holiday districts and resorts is served by the L.M.S.R. that the company can truly be said to cater for all types and tastes. From the diversity of holiday districts the L.M.S.R. serves, it follows that a holiday guide describing these districts will be full of variety and interest—which "Holidays by L.M.S." can certainly claim to be. For a modest sixpence one can buy a copy of this guide, which contains interesting and useful information about activities of the L.M.S.R. likely to interest the traveller and holidaymaker—hotels, restaurant and sleeping cars, holiday contract tickets, camping coaches, and road and air services. The text is adequate and well-written without savouring too much of the usual guide-book style.

Holiday Haunts.—Muriel Gill's delightful cover to the 1939 edition of this popular sixpenny Great Western Railway holiday guide shows two children setting out, we gather, for one of the many seaside resorts served by the Great Western. We look forward eagerly to the day when we, too, shall step into one of the familiar brown-and-cream coaches of "The Royal Road" and begin our fortnight's *dolce far niente* at a Great Western "haunt." And who is there better than Mr. S. P. B. Mais, our present-day George Borrow, to introduce us to each of the seven holiday areas into which the guide is divided. Over three hundred photographs illustrate and supplement Mr. Mais's work and Mr. Maxwell Fraser's descriptive text. Included also are: a summary of railway arrangements for holidaymakers; information on reduced fares, luggage in advance; and details about holiday seasons.

Holiday Handbook, L.N.E.R.—The holiday areas served by the L.N.E.R. fall into four distinct groups—Eastern Counties; Yorkshire; Northumberland and Durham; and Scotland. This has enabled those responsible for the arrangement of the present volume to classify the descriptive and illustrative matter under four heads. Bound in a cover of striking design, the handbook runs to 924 pages. There are 150 photogravure illustrations and numerous half-tone pictures. Other features include maps of holiday districts, and lists of accommodation at both seaside and inland resorts. On page 16 there is a complete list of holiday literature which sets out the many area booklets and maps published by the L.N.E.R. The wealth of information contained in the 1939 edition of the "Holiday Handbook" has not meant an increase in the price, which is still 6d.

Hints for Holidays.—The former London Brighton & South Coast Railway was justly regarded as the holiday line *par excellence*. As the successor of the L.B.S.C.R., the Southern Railway has carried on the good work with the greatest vigour, and on its Eastern and Western Sections as well as on the Central Section. A company which has near to its heart the policy of providing speedy and efficient transport for holidaymakers flocking to the coastal resorts it serves is not likely to lag behind in providing holiday literature. Indeed "Hints for Holidays," priced at 6d., is the Baedeker which should be read both by those who are thinking of spending their holidays in the sun at a "Southern" resort and those who always do.

"Here, There and Everywhere."—We have received from British Insulated Cables Limited, Prescot, a copy of the above-named brochure. The publication takes the form of illustrations of buildings where B.I. cables have been installed. The examples included—ranging from Scottish castles to South African business houses, from Belfast University to a Bombay cinema—are sufficient to show that in all premises and under all skies, B.I. cables give reliable service for little initial cost.

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THE SCRAP HEAP

For the Grand National on March 24 the L.M.S.R. will run 42 special trains—nine from Euston and St. Pancras—from all parts of the country to Aintree. The racecourse station at Aintree will handle approximately 26 trains between 10.0 a.m. and 1.50 p.m., and between 10.0 a.m. and 3.0 p.m. approximately 100 special and regular trains are expected to be despatched from Exchaege station, Liverpool. Within a few minutes of the finish of the race a non-stop electric train will leave Sefton Arms with the first of the 35,000 homeward-bound racegoers.

* * *

According to the *York Chronicle* of December 8, 1838, the directors of the York & North Midland Railway decided to call their first engine by the name of *Lowther*, as a compliment to the local member of Parliament, and as a token of gratitude for his unwearied exertions in their behalf when the North Midland Bill was before Parliament. The motion for this was proposed and seconded by two directors who were politically opposed to Mr. Lowther.

* * *

The Civil Engineer and Architect's Journal for December, 1838, said that great inconvenience had arisen from the destruction of the Denbigh Hall station on the London & Birmingham Railway, and quoted the *Bedford Mercury* in announcing the impending establishment of a new station "at the Bletchley Cross Road, about half a mile from Fenny Stratford, agreeably to the request of a large number of the gentry and farmers of that vicinity."

NATIONAL SAFETY FIRST

Through the National Safety First Association's industrial members safety propaganda reaches over 1,000,000 workers. During 1938, over 250,000 safety posters were issued and distributed, and over 200,000 copies of road safety codes sent out. More than 120,000 professional drivers were entered in the safe driving competition, for which in 1937 upwards of 85,000 awards were issued. These are some of the interesting facts contained in the annual report of the National Safety First Association.

* * *

A BELGIAN VERSION OF THE TUNNEL STORY

M. Aurélien Scholl has an amusing note on what he calls the "forgotten tunnel." The other Sunday, being at Brussels, he was struck by the extreme thinness of the earth covering the Braine le Comte tunnel, and wondered why the common sense of the engineers who made the line did not direct them to continue the cutting, and thus avoid a subterranean passage. The mystery was explained to him by a Mons advocate. When railways were in their veriest infancy the Belgian Government sent a party of engineers over to England, to acquire experience in the construction of the new iron highways, and on their return they were instructed to lay out the first railway in that enterprising little kingdom. The work was accordingly put in hand, and on its completion one of the engineers exclaimed, "Good heavens, we have forgotten the tunnel!" The consternation was general, especially when it was remembered that there was not a single line in England but could boast of a tunnel. What was to be done? Nothing but to construct the long corridor at Braine le Comte, and when it was finished the earth was put on the top. The tunnel was then, says the witty Aurélien, the glory of the line. —*From "The Railway Official Gazette" of October* 15, 1882.

* * *

Below we reproduce the text of one of the advertisements, telling the public about its services, that the Victorian Railways administration regularly inserts in Melbourne papers. In its original form the advertisement is surrounded by a frieze, showing some of the many commodities that the freight services carry :—

IF NOT PERFECTION . . .

Last year the freight handled by the Victorian Railways consisted of over 6,500,000 tons of goods, involving millions of consignments, and including goods as fragile as eggs and glassware, as bulky as electrical transformers and petrol storage tanks, as cumbersome as cement culvert pipes and harvesting machinery, and as delicate as enamelware and highly polished furniture.

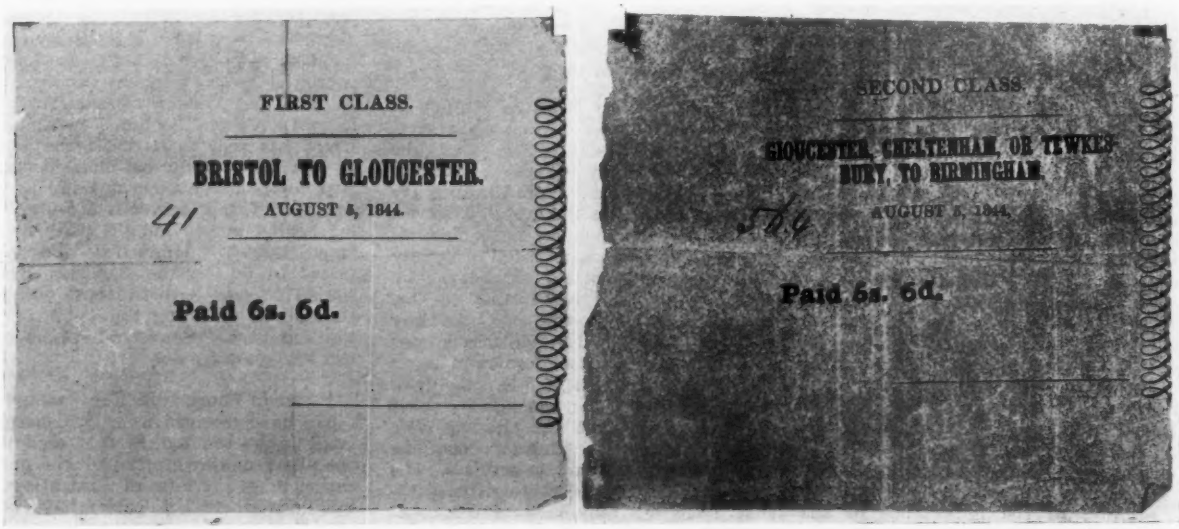
The fact that this vast quantity of freight was carried at the very low average charge of 1¼d. a ton mile, and at a minimum of damage (amounting to only 3½d. for every 1,000 tons carried one mile), is eloquent testimony to the efficiency and care in handling demonstrated by the Victorian Railways in their freight services.

If not Perfection—

That achievement is so near to perfection as to justify your entrusting the Victorian Railways with the transport of *all* your goods in the future.

THE VICTORIAN RAILWAYS

FOR SAFE, FAST AND DEPENDABLE SERVICE



We are indebted to Mr. G. W. Hendley of the L.M.S.R. District Goods and Passenger Manager's office, Bristol, for lending us the two early railway tickets we reproduce. These were discovered in a family Bible at Gloucester, where they appear to have been preserved for a great many years, and eventually were given to Mr. Hendley. Both tickets are printed on thin paper approximately 4 in. by 3½ in.; the first class ticket on canary yellow paper and the second class on olive green

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

VICTORIA

Model of Parlour Car Exhibit for World's Fair

The Victorian Railways in conjunction with the Australian National Travel Association are exhibiting at the New York World's Fair a model of the Spirit of Progress parlour car body, as representing modern travel in the Commonwealth. Built at Newport shops, the model is ½th full size and 10 ft. 2 in. long, and is complete in every detail down to the telephone, writing paper and envelopes as supplied in the actual car. About ⅔ of one side are cut away to enable all the interior details to be seen, and where cut away the walls and roofing show the layers of insulating materials, air-conditioning ducts, &c. The whole is beautifully finished and remarkably realistic.

WESTERN AUSTRALIA

New Industrial Awards

During the closing quarter of 1937 the unions covering the wages staff of the Railway Department submitted claims to the State Arbitration Court for new industrial awards, including increases in rates of pay for all grades, as well as alterations in allowances and conditions. The Court decided to hear the claims in respect of marginal rates above the basic wage specially, the remainder of the claims to stand over and be heard in order of priority with other cases listed. Interim awards covering the marginal issues were made, the decision in effect resulting in increased expenditure to the department of approximately £16,000 per annum.

The balance of the claims has now been heard by the Court, and final awards issued. One of the principal gains to the employees is a provision for sick leave, as a result of which employees losing time through sickness may receive up to one week's paid leave per annum. A complete guaranteed week of 44 hr. was also conceded in lieu of the previous provision whereby in the weeks in which Christmas Day, Good Friday, and Labour Day fell the guaranteed week was reduced by a day. Further increases of approximately 3s. a week in margins were granted in the case of guards, shunters, and signalmen. The cumulative effect of these concessions and the previous marginal increases granted in the interim award represents an increase in expenditure of approximately £30,000 per annum.

Railway Washaways

On January 11 a severe cyclone struck Port Hedland, on the north-west coast, doing considerable damage to the town and the railway running inland therefrom. This cyclonic disturbance subsequently travelled south towards the goldfields areas, where severe rainstorms have caused considerable damage. Extensive washaways have occurred at various points on the railway system and numerous train services have been held up, including delays to the interstate services between Western and Eastern Australia. It is estimated that damage in the town of Kalgoorlie alone, as a result of the storm, will exceed £50,000. A redeeming feature is that some dams hitherto empty have been filled, thus providing a welcome replenishment of railway water supplies in this area, while the rain should also prove of vast benefit in some of the pastoral areas, where semi-drought conditions have existed for some time past.

RHODESIA

Mosquito Curtains in Sleeping Berths

Mosquito nets are now provided by the Rhodesia Railways for the comfort of their passengers in sleeping cars. The nets are specially designed to fit the berths and the charge is 1s. per unbroken journey. The *de luxe* mattresses introduced have also proved very popular and the number has been increased, the hire-charge being reduced from 4s. 6d. to 3s. per journey.

SOUTH AFRICA

Tourist Traffic

There was a record number of visitors to the Union in 1938, namely, 39,922, an increase of 6,278 over 1937. This figure also represents an advance of 4,652 over the 1936 Empire Exhibition record year when there were 35,270 visitors to the Union. The number of visitors from Rhodesia and Bechuanaland Protectorate was 21,386, and from other countries (mostly overseas) 18,536. The comparative figures for the previous year were 19,040 and 14,604 respectively.

FRANCE

Railway Economies

Economies in railway management and the difficulties encountered in balancing the railway budget were the subject of papers read by M. Le Besnerais, General Manager of the French National Railways Company (S.N.C.F.) and some of his colleagues, MM. Jean Lévy, Boyaux, and Porchez, before an audience composed of railway engineers and others interested in railway problems in Paris on February 24 at the Salle des Ingénieurs Civils.

M. Le Besnerais emphasised how difficult it was for the S.N.C.F. in the early stages of its existence to make traffic receipts cover both operating expenses and standing financial charges. This difficulty had led the Government to exempt the S.N.C.F. from the obligation to meet one-fifth of the financial charges in 1939. Receipts this year would not fall far short of covering expenses. M. Le Besnerais saw in the Government's decision the recognition of the abnormal situation due to the trade depression and the methods of framing tariffs in the past. While it was natural to aim at balancing the railway budget each year, he thought results ought to be judged over a series of years sufficient to allow periods of prosperity to offset times of depression. The ideal course in the past would have been—and would be in the future—to reserve surpluses for renewal of rolling stock and installations and covering the deficits of lean years. But hope of recovery in traffic must not be an excuse for neglecting strenuous efforts in favour of substantial economies. He estimated that economies in the next two years might exceed 10 per cent.

Results of Amalgamation

M. Jean Levy, Chief Mechanical Engineer, pointed out how the amalgamation of the former railway systems had given greater scope for a policy of economies, notably in uniformity of signalling, re-use of rails, standardisation of material and generally in the selection of the least costly solution. M. Boyaux, Commercial Manager, outlined the new commercial methods introduced to give better service to the public. M. Porcher, Chief Civil Engineer, dealt with the solution of some special railway problems under S.N.C.F. conditions.

Increase in Goods Traffic

Goods traffic returns are showing a continued increase this year. In the first four weeks there were some fluctuations, but the total showed an increase of 27,910 wagons loaded in comparison with the same period in 1938. For the fifth week the increase was 1,565 wagons, 6,814 for the sixth and 9,589 for the seventh ending February 18. In all, the increase since the beginning of the year is 45,878 wagons loaded, or an average of 6,554 a week. The total number of wagons loaded on the S.N.C.F. lines in the first seven weeks was 2,025,051, compared with 1,979,173 in 1938.

Transport Co-ordination Protests

In some country districts of France the inhabitants are protesting against the closing of certain branch railway lines to passenger traffic and their replacement by motorbus services under the road and rail co-ordination measures. Grievances of the rural population have been aired in the course of a debate in the Senate on the co-ordination question.

One Senator said that the raising of freight rates had diverted millions of tons of goods to the canals, while the

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considerable rise in passenger fares had imposed a heavy burden on users without bringing much profit to the National Railways Company (S.N.C.F.). He also maintained that more substantial indemnities should be allowed to road carriers, whose lines were suppressed or modified. Other speakers complained that the opinions of departmental councils had been disregarded and asked that road carriers should be allowed more time in which to transform their vehicles to meet the co-ordination requirements.

Annual Saving Fr. 1,000 Million

M. de Monzie, Minister of Public Works, in replying, said that he had to carry out a co-ordination programme planned and revised by a dozen predecessors. First steps in co-ordination had been taken in 1930. Growth of the railway deficit due to the trade depression had made the problem more urgent. The Minister stated that co-ordination had effected an annual saving of 1,000 million francs and of this only 300 millions were due to the suppression of branch lines. To those who said railcars might be used on such lines, M. de Monzie replied that the prime cost of railcar traction was double that of the motorbus.

Concessions to Road Interests

In general, added M. de Monzie, if inconvenience had been caused to some localities and to road transport interests, this was due to the necessity of reducing the railway deficit to co-ordinate the transport system. But care had been taken not to hamper the development of road traffic. First of all, he had upheld the simple rule of equal tariff charges by road and rail. Next, he had maintained the right of the road carriers to short-distance traffic, while the long-distance should go to the railways. In this, he was merely applying principles laid down by his predecessors and also in practice abroad. The Minister stated that a delay of five years would be granted to road hauliers to modify their vehicles in accordance with the co-ordination Decrees. Further, he would modify the Decree requiring road trucks and vans, 2 to 2¼ metres (6 ft. to 7 ft. 5 in.) broad not to exceed a maximum speed of 50 km.p.h. (31 m.p.h.). He also said that only 503 km. (312 miles) of lines had been closed contrary to the advices of the departmental councils.

Nine Railwaymen Sentenced

Arising out of the abortive general strike on November 30, a case involving eleven railwaymen was recently tried before the Dunkerque court. The men, who were employed at the railway depot near that town, were charged with preventing the locomotives from leaving the engine shed. Nine men received prison sentences and two were acquitted. Three of the sentences were for terms of one, three, and four months respectively. The shorter sentences varied from six to fifteen days and these defendants were given the benefit of the First Offenders' Act and released.

More Lines Closed to Passengers

As from February 6 the following additional lines of railway have been closed completely or in part to passenger traffic.—

Completely Closed to Passengers (Total 436 km.)

Port-de-Piles—Port Boulet.
Argent—Salbris.
La Brohinière—Dinan.
La Brohinière—Loudéac.
Rosporden—Concarneau.
Quimper—Pont-l'Abbé.
Morlaix—Carhaix.
Gissey-sur-Ouche—Epinac.
Epinac—Les Laumes.
Maison-Dieu—Pouillenay.

Closed for Certain Types of Passenger Traffic (Total 177 km.)

Quimper—Landerneau.
Dijon—Gissey-sur-Ouche.
Dijon—Chalon-sur-Saône.

HOLLAND

Miscellaneous Notes

A further 10 first and second class carriages have been converted to third, and 14 more are to be similarly treated. Instead of the wooden seats hitherto provided these converted thirds are upholstered in leather cloth.

The 1938 summer timetables included bus services in so far as these had been notified to the railway administration. The timebook has, however, not proved satisfactory, and bus services will not be included in the 1939 issue.

Railway Centenary Souvenirs

The Post Office is to issue special 5 and 2½ cent commemorative stamps for the railway centenary. Silver spoons and plates of blue Delft china, with pictures of railway historical events, are already on sale as souvenirs of the event.

ROUMANIA

New Trans-Carpathian Line

On December 19, 1938, a new trans-Carpathian line was opened, provisionally and only for moderate speeds and loads, between Kleinilva and Dornavatra, a distance of 77 km. (48 miles). The line had often been proposed, for strategic reasons, in Austro-Hungarian times and was eventually begun, but the war and other circumstances put a stop to the work. About two years ago, however, the Roumanian Government decided to proceed with it, and construction was pushed forward energetically. The route is of importance to inland traffic and joins places previously connected only by a very circuitous line. Heavy engineering works were required, including 45 bridges—5 of them large—4 viaducts, 167 cuttings, and 9 tunnels—the longest 856 m. (936 yd.) long. The summit of the line is 894 m. (2,932 ft.) above the sea, a lower altitude than on the other routes over these mountains.

TANGANYIKA

Railway Tonnages During 1938

The following table shows the tonnage dealt with by the Tanganyika Government Railway during the 12 months of 1938 compared with those for the same period of 1937 :—

	1937	1938	Decrease
Export tonnage railed to coast	210,451	191,719	18,732 = 8·9%
Import tonnage railed from ports	155,610	128,525	27,085 = 17·4%

CHINA

The Yunnan Railway

Traffic on the Hanoi—Yunnan (French) Railway has trebled during the past 12 months, due to its being the only rail line of communications now open to the Chinese Government and its forces. Great accumulations of materials of all kinds are now reported to be lying at Hanoi, unable to be transported into China because the railway, as well as being of metre gauge, has very severe gradients and curves and cannot cope with the great volume of traffic. Ten new locomotives and 200 wagons have, however, been ordered, and the traffic working has been reorganised.

Reopening of the Tientsin-Pukow Railway

After nearly a year's interruption, through traffic on the Tientsin—Pukow Railway was resumed on January 9, but not for the public. The Tsinan—Hsuchow and Pukow—Pengpu services have been functioning, but through running has had to await the completion of a bridge near Pengpu, destroyed last year. It is expected that public traffic also will be resumed shortly.

Japanese Re-open Railway to Yochow

The Japanese have now repaired the 226-km. section of line from Wuchang (Hankow) to Yochow, the northernmost part of the Canton—Hankow Railway, and train services were resumed on January 1, two months after its destruction by the retreating Chinese.

Internal Lines Still in Chinese Hands

Meanwhile, despite the lines concerned being just behind the military front and in places—particularly near Tungkwan—subject to constant artillery bombardment, the Chinese are continuing to run regular passenger services from Sian eastwards to Chengchow and southwards from the latter junction to Sinyang (over halfway to Hankow), on the Lung—Hai and Peiping—Hankow lines respectively.

ITALY

Developments in the Genoa Area

Due, first to the concentration of all traffic between the Italian Riviera and Turin and Milan upon the Sampierdarena—Genoa double-line bottle-neck section; and secondly, to the growing traffic at the Port of Genoa and at the two stations serving that city, it has been decided to carry out extensive developments in this area. The works projected are: (1) increase of platform roads at Genoa-Principe station from five in number to nine; (2) extension of the track layout at Genoa-Brignole; (3) construction of a new chord line between Genoa-Principe and a point on the Turin and Milan lines *via* Ronco, so as to divert northern traffic from the Principe—Sampierdarena section; (4) the construction of a new station at Savona, north of the River Letimbro, and the diversion of the Sampierdarena—Voltri and Varazze—Savona sections of the Genoa—Ventimiglia line inland to avoid the industrial area of the port of Genoa in the former case, and coast erosion in the latter; (5) the doubling of the Savona—Ventimiglia section and also the line from Manarola to Tramura on the Genoa—Spezia section; (6) the construction of six new stations on the Genoa—Ventimiglia section and the enlargement of such stations as Ventimiglia and Spezia. In addition other works are envisaged in connection with the goods station at Genoa. It is expected that these various undertakings will be completed within about eight years' time, and that they will cost 1,600 million lire in all.

New Chord Line Being Surveyed

In order to shorten the distance between the German-Italian frontier at the Brenner pass and Genoa, and thereby open up new opportunities for the development of shipping at Genoa, a new line of railway is under consideration. Two alternative alignments are likely to be surveyed (*a*) from Genoa to Borgotaro, on the Parma—Spezia line, and (*b*) from Genoa to Piacenza. This shortened route would place competition *via* the Gotthard route on a new basis.

In expectation of the early opening of the Treviso—Ostiglia* through route, and the completion of the Vittoria—Ponte delle Alpi construction,* the State Railways have already taken over the ownership and working of the Conegliano—Vittorio Railway from the Società Veneta of Padua.

New Italo-German Line Proposed

Negotiations are reported to be in progress between Italy and Germany for the construction of a new line to connect Malles—the terminus of a branch from Bolzano—with Landeck. It is expected that Westphalian coal will use this line, if built, to enter Italy.

* These lines were described in our issue of March 26, 1937.—Ed. *R.G.*

CHILE

Reduced Wheat Freights on State Railways

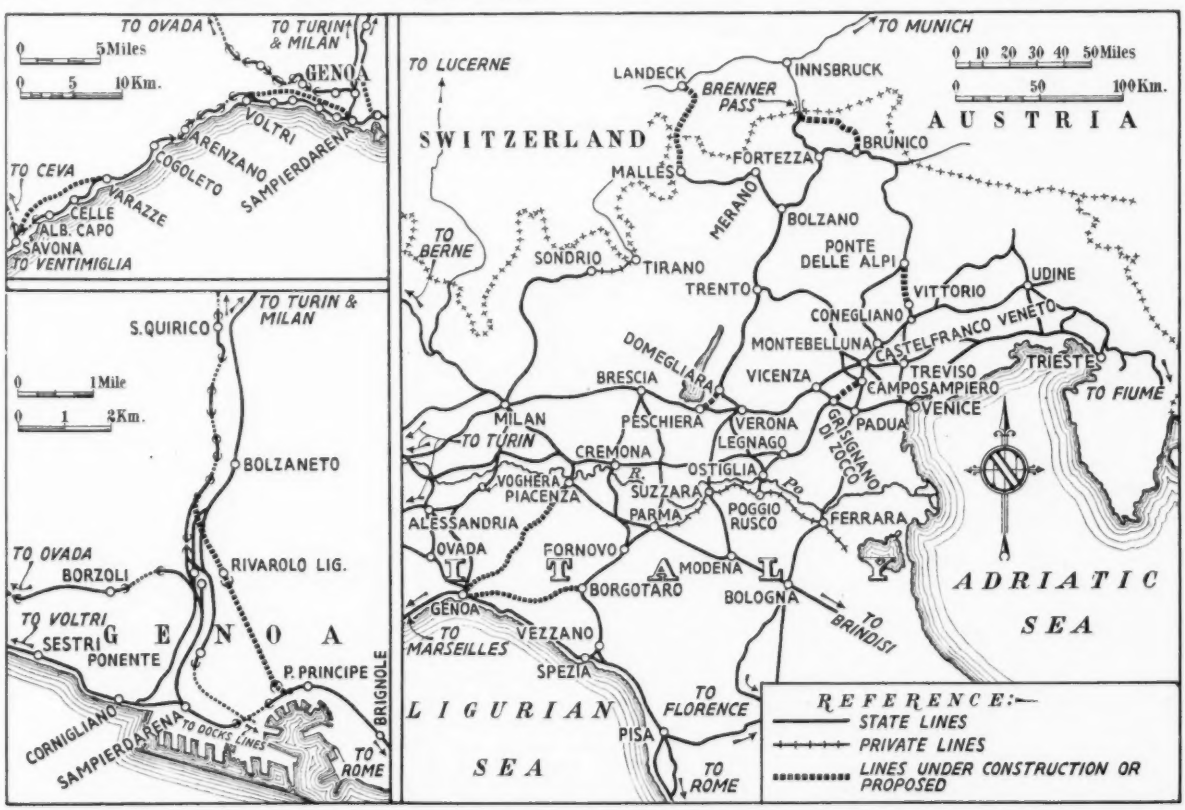
According to news from Santiago, the Chilean Government has authorised the State Railways to reduce the freight on the carriage of wheat by 50 per cent. between any of the stations in the Northern and Southern zones, from February 15 to December 31 of the present year, to enable the agriculturists to dispose of the grain at the prices fixed by the Government.

U.S.S.R.

New Construction Works

A new 247-km. line, known as the Ulan—Ude Railway, in the Soviet Republic of Buryat-Mongolia, was officially opened for traffic on February 4.

Work is soon to begin upon a new bridge, over 1 km. in length, across the River Oka, near the Molotov automobile works at Gorky. It will link up the Gorky Railway with the Kazan Railway, and forms part of the Gorky junction remodelling project.



Sketch maps showing new connections in and around Genoa, deviation of the line thence towards Ventimiglia, suggested alternative chord lines from the north-east, and a proposed new railway between Italy and Germany

PROBLEMS CONNECTED WITH LOCOMOTIVE DESIGN—I

Presidential address to the Institution of Locomotive Engineers by
*Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway**

IT may be of interest to concentrate on the individual locomotive of normal type, and to consider some of the problems which still remain to be solved and what is being done to meet them, at any rate, so far as one railway company is concerned.

When due recognition has been paid to the many attempts which have been made to depart from the conventional type, I think that the improvement which has been found possible in the basic locomotive during the past decade has been astonishing. I do not say this in any spirit of complacency as to what has been done, but rather in recollection of the successive "last words in design" which have appeared through the years, each one in turn seeming to represent as far as it was possible to go within the outlines of the normal type. Where so much has already been done, there is every encouragement to look to the future for a continued process of refinement and development.

Safety, reliability, availability, and efficiency are the cardinal requirements in any locomotive design. Of these the first two have always been paramount, while it is now being realised that the financial gains of increased availability are no less important than those of efficiency.

The Locomotive as a Vehicle

Increased size and weight and higher speeds are bringing into prominence all over the world the necessity of studying the locomotive more closely as a vehicle on the track. The interdependence of the engine and the track it runs on has long been recognised, but we in this country have been in a fortunate position for many years in that our track has generally been able to withstand by a generous margin the loads and forces which our locomotives have brought to bear upon it. Many considerations have led to this. Firm roadbed, favourable climate without extremes of rain or drought, adequate funds for maintaining a high standard of permanent way, and the use of relatively small locomotives have all contributed, and so long as the track, roadbed, and bridges are able to withstand the vertical loads brought to bear upon them, whether in the form of static loads or hammer blow, all has been taken to be well.

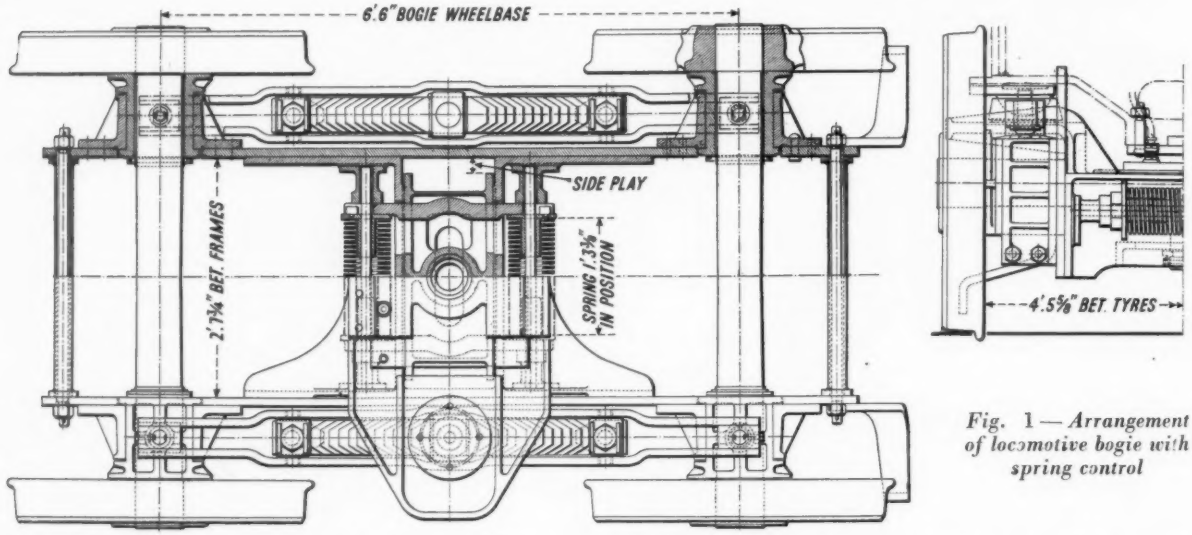


Fig. 1—Arrangement of locomotive bogie with spring control

Under present-day conditions of speed and power requirements, however, it is becoming realised that the lateral forces exerted by the engine on the track are of hardly less importance than the vertical loads, and the question of the guiding of an engine and the flange forces exerted is coming into prominence.

Quite apart from the practical need for precise information on this problem, there have been two obstacles in the way of exploring it up to the present. One is that it defies mathematical treatment, and the other is that until quite recently no practical and reliable direct means of measuring flange forces had been devised.

With regard to the former, there have been many attempts to deal with the matter on a mathematical basis, and the name of Carter in this country will occur, in addition to others both here and abroad who have done much valuable work. Unfortunately the whole of the components involved are elastic to varying degrees, the rail and the roadbed, as well as the locomotive wheels, axles, and frame. Equations of motion are not only of great complexity—one such equation as I have seen extends over three consecutive pages—but assumptions have to be made in order to obtain a solution, and such assumptions are themselves sometimes far from actuality.

The experimental approach, therefore, has been favoured in all countries which have investigated the matter, and direct measurement of flange forces has been made possible by a number of ingenious measuring devices

* In our issue of February 24, we summarised and commented upon the presidential address presented to the Institution of Locomotive Engineers by Mr. W. A. Stanier. The full address is reproduced by permission in this and succeeding issues with illustrations representing some of the lantern slides shown during the actual reading on February 22

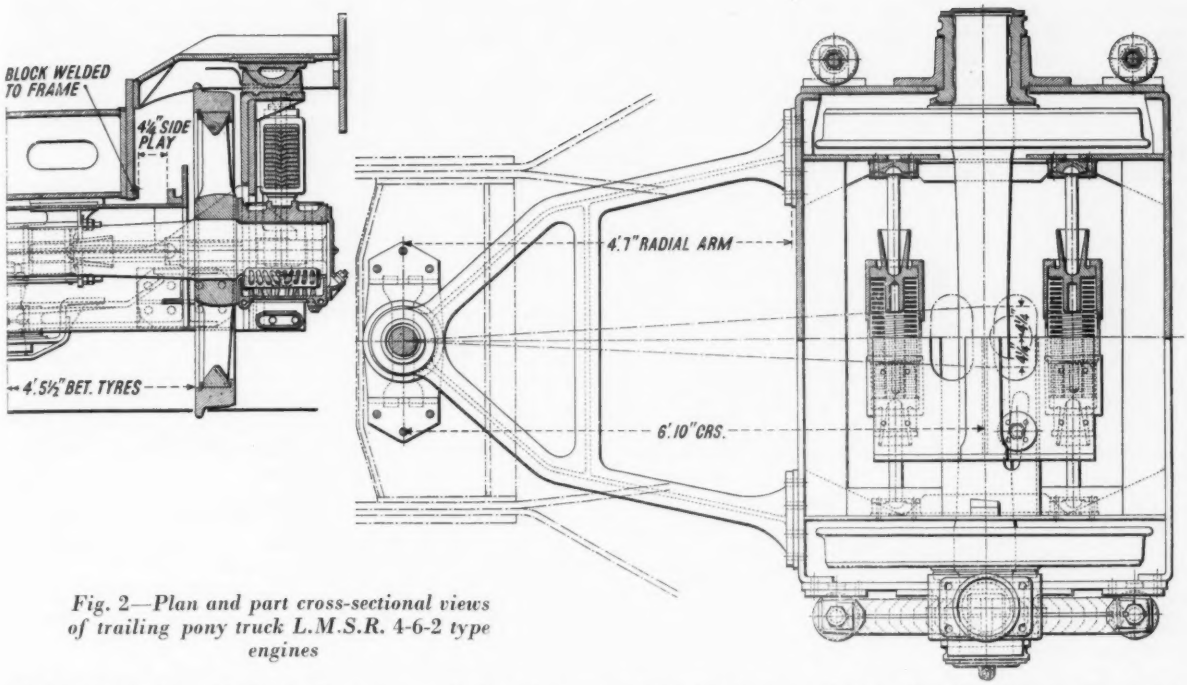


Fig. 2—Plan and part cross-sectional views of trailing pony truck L.M.S.R. 4-6-2 type engines

such as the carbon block in Germany and the piezo-electric quartz element in France, and the special Brinell track in America. I do not intend to describe these devices to you tonight, but rather to make a few general remarks on how the problem is to be met in design.

Guiding of the Locomotive on the Track

All the experiments so far carried out have drawn attention to the fact that it is the leading coupled wheels at which the highest flange forces are attained. It is easy to visualise this in an engine without guiding wheels; and where guiding wheels are fitted in the form of a bogie or pony truck, some degree of control has to be exerted. The object of such guiding wheels is not only to relieve some of the coupled wheel flange forces when the engine is rounding a curve, but also by restraining the extremities of the engine, to avoid oscillation and resulting flange forces on the straight.

The problem consists of so choosing the arrangement and value of the guiding elements that the flange forces of even a heavy locomotive at high speed remain well within what the track will stand, either on curves or on the straight.

Bogies and trucks exert their centring effect by various

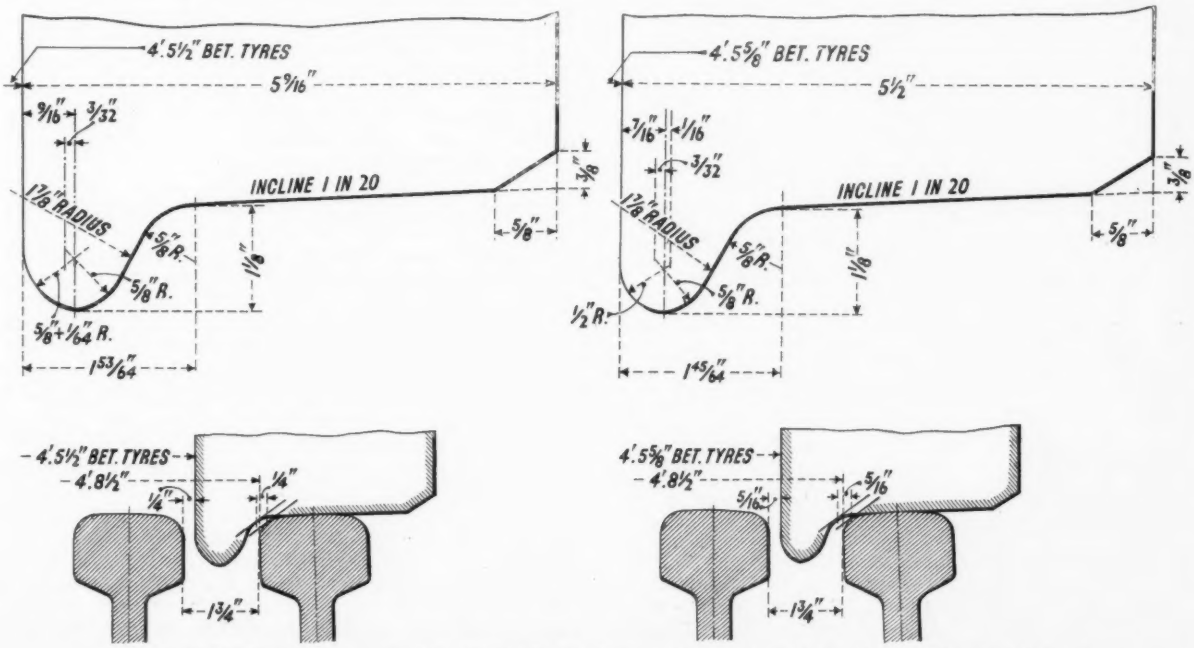


Fig. 3—(left) New type tyre profile with thickened flange; (right) standard profile and flange thickness

arrangements depending on gravity in the case of swing links and inclined planes, or on centring force directly applied by springs. The latter arrangement is common in British practice, and Fig. 1 shows an arrangement of bogie having spring control. The important points here are (*a*) to have a sufficiently strong control, in this instance effected by two coil springs in parallel; (*b*) to have the friction at the point where the weight is carried of a low and constant value; and (*c*) to have some degree of rotational damping to prevent the bogie hunting as an individual unit of short wheelbase. This latter is achieved by the friction on the side bearing pads acting at a distance from the centre of rotation.

Fig. 2 shows a pony truck as used on a Pacific locomotive, which also contains the same features. The value of the spring control is, however, much lower than on the bogie, first because any centring effect on the truck acts against the bogie centring force on curves, and secondly because so high a control as on the bogie is not required in backward running where speeds are moderate.

Representative values for the initial and final loads on the control springs for different types of locomotive are as follow:—

Type	Weight of Engine (tons)	Bogie Control Spring Load (tons)		Truck Control Spring Load (tons)	
		Initial	Final	Initial	Final
4-4-0	54	1·56	2·6	—	—
4-6-0	79½	2	2·83	—	—
4-6-2	108	4	5	1·44	3

Before leaving the subject of guiding, there is another aspect of interest. A moment's thought will show that any side control arrangement, whatever its nature, can take effect only after the side clearances between axlebox and horns, wheelboss and axlebox and wheel flange and rail have been taken up. An engine in which the sum of these clearances is great will be uncontrolled for a measurable distance on either side of its centre line, and oscillation and high flange forces are to be expected. The maintenance of bogie axleboxes is, therefore, an important factor, and on high-speed Pacific type engines on the L.M.S.R. a thicker flange is used on both bogie and hind truck wheels in order to reduce the clearance between wheel and rail. Fig. 3 shows the new tyre profile adopted.

So far, in this country, all the above-mentioned measures have been assumed satisfactory if steady running of the engines was obtained on both straight and curved track at the highest speeds, and if no residual track distortion or deterioration was reported by the civil engineer. As already pointed out, it is only the excellence of our track which has allowed such indications to be sufficient hitherto, and it is now necessary for actual flange forces to be recorded by suitable apparatus on the engine. The application of such apparatus represents the next step forward we have to take in this connection.

(To be continued)

The Japanese Government Railways in 1936-37

THE increase in traffic of all descriptions on the Japanese Government Railways, initiated in the year 1933-36, continued in the financial year ended March, 1937, and according to the annual report just received, approached in the latter period to something like a boom. Gross traffic receipts, including road motor takings, reached a total of 585,956,000 yen, again constituting a record high level in the earnings of the State Railway. The improvement is attributed in great measure to the opening of new lines in different localities, the establishment of another regional division at Niigata, and the inducements offered to attract tourists and other travellers. Coaching receipts totalled 316 million yen, or 24,370,000 yen (8·3 per cent.) more than in 1935-36. The number of passengers increased by 7·5 per cent. and the corresponding receipts by 8·4 per cent., the average passenger journey, at 24·8 km., showing a slight increase. Goods receipts were 11·4 per cent. higher, and the average haul, 175·2 km., was also slightly longer. The principal operating statistics were as follow, compared with the previous period:—

	1935-36	1936-37
Length of line open, km. ..	17,030	17,422
Passengers, number ..	985,041,029	1,058,630,711
Goods, metric tons	81,039,134	89,342,111
Train-kilometres	240,799,035	255,412,711
Operating ratio, per cent. ..	60·5	59·3
	Yen	Yen
Passenger receipts	253,042,635	274,423,400
Goods receipts	228,101,754	253,664,698
Total earnings	544,534,114	598,171,399
Working expenses	329,537,000	354,420,373
Net earnings	214,997,114	243,751,026
Capital	3,938,262,736	4,089,624,978
Percentage of profit to capital	5·7	6·2

The capital account of 4,090 million yen is made up of 2,118 millions capital proper and 1,971 millions of debenture capital. Interest and other first charges amounted to 98,289,000 yen, leaving a net profit of 145,462,000 yen. The length of lines operated by the Government was again increased by the opening of extensions amounting to 392 km., bringing the total open lines to 17,422 km., corresponding to 27,813 track-km. There were 2,339 km. of line under construction or not yet open to traffic at the end of the financial year. Road motor services operated by the Government Railways totalled 37 in number, and aggregated 1,980 km. in length. These services carried 8,944,321 passengers and 73,724 tons of goods during the year, producing 2,074,170 yen and 209,455 yen respectively, an increase of over 50 per cent. over the previous period. The result of the State Railways warehousing business was also satisfactory, and a new warehouse was opened at Osaka. Shipping and ferries, worked as an accessory to the railway system, again showed increased receipts.

On March 31, 1937, there were 227,689 employees of all grades in the employ of the Government Railways, or 4·2 per cent. more than in the previous year. Salaries and wages amounted to 153,812,691 yen, or 43 per cent. of the working expenses. The organisation of the Government Railways, with the establishment of a new region this year, is now decentralised in eight divisional regions. Apart from the Government Railways, there are in Japan some 250 local railways, the length of which on March 31, 1937, aggregated 7,019 km. These local railways carried, in 1936-37, 575,602,867 passengers and 30,059,157 tons of goods, which produced receipts of 68,929,859 yen and 22,308,862 yen respectively. The total operating revenue of the local railways amounted to 101,710,620 yen, and the working expenses to 57,558,086 yen. As these railways, besides contributing to local prosperity, are indispensable as feeders to the Government system, a certain amount is granted to them in the form of subsidies, these grants amounting in 1936-37 to 854,027 yen, paid out of the net revenue of the Government Railways.

A DISTRICT ENGINEER'S CENTRAL DEPOT ORGANISATION

The Darlington District Engineer's central shops and depot, in the North Eastern Area of the L.N.E.R., provide an interesting example of modern practice

THE District Engineer at Darlington, L.N.E.R., is responsible for the maintenance of nearly 500 route miles of line, or 1,410 single track miles, 170 passenger and goods stations, 15 engine sheds, 274 signal boxes, and 1,300 bridges. He also maintains the workshop buildings of the Chief Mechanical Engineer, including the North Road locomotive works, the Faverdale wagon works, and the Stooperdale works at Darlington, and the Shildon and West Hartlepool wagon works.

From the map it will be seen that Darlington itself, where the District Engineer's shops are situated, is well placed near the centre of the district. A general plan is given of the layout of the shops, from which it will be seen that they have been carefully designed to minimise labour and expedite work.

Central Depot

The shops are in close proximity to Darlington passenger station and cover an area of 2¼ acres. The layout of the buildings is arranged in two blocks, the west side dealing with woodwork and the east side ironwork. The yard between the buildings is laid in tar-macadam, with siding accommodation for the reception and despatch of material carried by rail; a 2½-ton mobile crane is used for unloading and loading.

The personnel of the shops consists of a works superintendent, a works inspector, nine supervisory foremen, a crane inspector, and 243 workmen of all trades.

Organisation of Work

The work carried out is divided under the following heads:—

Renewals or Heavy Repairs.—A survey is made annually of work of this type, and in each case an estimate (labour forces and material) is prepared. When approved a chart is made for the year showing the periods when the work is to be undertaken.

Maintenance Repairs.—For the purpose of carrying out systematic repairs, the district is divided into six areas. Each area is dealt with in two months, so that the whole of the district receives attention annually. The rota for repairs in the areas is arranged so that the one dealt with in the January-February period of any year coincides with the area selected for painting during that particular year.

Shopwork.—Work falling under this head comprises the manufacture and repair of articles normally used by the Engineer's Department, also the preparation of material required for renewals, repairs, and other work.

Specially-Authorised Works. — This includes work not mentioned under the foregoing heads.

Emergency Works.—Work which necessitates immediate attention, *e.g.*, gas and water services, and items arising from accidents. Orders of this description form only a small percentage of the total items dealt with.

An order number is issued for each piece of work, and dealt with as follows:—

1st Stage. — Details of materials and labour forces required in each grade are obtained. From these particulars requisitions for material and shopwork orders are prepared.

2nd Stage.—Shop-prepared and other materials required for each job are obtained, and placed in the despatch compound duly labelled, so that each article can be readily identified for its particular job.

3rd Stage. — Orders reaching this stage await labour forces. Each week a review of all items is made, and allocated according to the labour forces available.

4th Stage.—Materials are despatched from the compound for jobs selected, and the transport of men is arranged.

To assist the staff, a two-monthly chart is prepared from the yearly chart showing the order in which jobs should be dealt with for all work falling under the heads of Renewals, Maintenance, and Specially-Authorised.

Shop Equipment

From raw material to finished article, everything has a systematic progress. At the south end of the west block of buildings is the timber storage accommodation, whence the material passes into the sawmill containing the following machines:—

Rack saw	Driven by 40-h.p. motor
Circular saw	„ „ 30 „ „
Drag saw	„ „ 40 „ „
Automatic saw sharpener	„ „ 1 „ „
Plug-pointing machine, Emery wheel, Grindstone	„ „ 5 „ „
Sawdust extractor	„ „ 6 „ „

From the sawmill the manufactured timber then passes into the joiners' shop, in which are installed the following machines:—

Slitting circular saw, Tenoning machine, Wood-turning lathe, Spindle moulding machine, Surfacing machine	Driven by 10-h.p. motor
Heavy boring machine, Band saw machine, Chain mortice machine, Thicknessing machine	„ „ 30 „ „

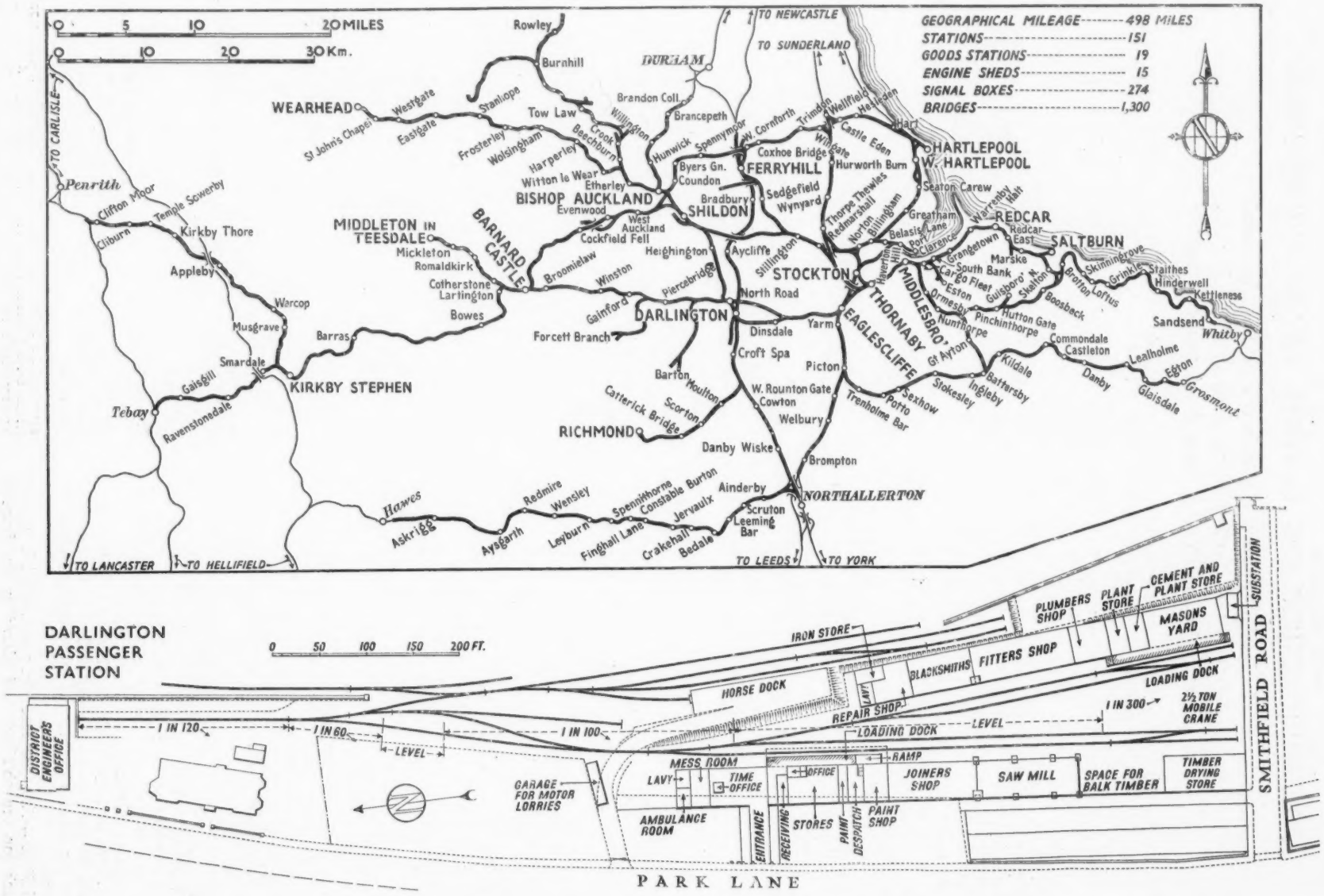
The 30-h.p. motor transmits its power by underground shafting, and the 10-h.p. motor drives by overhead shafting, except the tenoning machine, the shafting to which is underground. The dust and shavings from the machines are dealt with by a motor driven extractor.

On completion finished woodwork passes into the paint shop and thence to the dispatch compound for removal to the site of work.

At the south end of the east block of buildings is an electric power sub-station, adjoining which, at loading dock level, are a masonry yard, a cement store, and the plant stores. The plumbers, tinsmiths, and glaziers shop is provided with machines for rolling, shaping, and cutting tin, copper, and zinc. In the fitters' shop the machinery consists of:—

Slotting machine, Lathe, Shaping machine, Tool grinder, Two sensitive drills, Power hack saw, Screwing machine, Grindstone, Two drill grinders	Driven by 30-h.p. motor through overhead shafting.
Screw cutting lathe	Driven by 10-h.p. motor
Radial drilling machine	„ „ 5 „ „
Bolt screwing machine	„ „ 3 „ „

XUM



Map of Darlington District, North Eastern Area, L.N.E.R., and layout plan of engineer's depot

Sawmill, with joiners' shop beyond

Sawmill, looking towards timber storage yard

Fitters' shop, looking towards blacksmiths' shop

Stores ; note the well-arranged bins and shelving

DISTRICT ENGINEER'S SHOPS, DARLINGTON, L.N.E.R.

View of yard from north showing covered loading dock

In the blacksmiths' shop there are:—

7-cwt. pneumatic hammer	.. ..	Driven by 20-h.p. motor
Punch and shears	}	,, ,, 15 ,, ,,
Grindstone	}	through overhead shafting.

8 blacksmiths' hearths each blown by a ¾-h.p. motor, exhausted through underground flues by a Climax Multivane fan driven by a 3-h.p. motor.

A Quasi-arc static electric welding set and an oxy-acetylene cutting plant.

Adjoining the blacksmiths' shop accommodation is provided for iron stocks used by fitters and smiths, as well as re-conditioned platelayers' tools for re-issue.

General Stores

The stores are designed and equipped with racks and bins suitable to accommodate all classes of paints, oils, glass, hardware and ironmongery. At the south end is a despatch compound where material, manufactured and from store, is assembled in readiness for despatch as labour forces become available. At the north end is the reception compound where the various materials are received and checked before passing into the stores.

At this point is the main entrance to the shops, where the workmen check on and off duty. Provision is also made in the entrance area for the storage of workmen's cycles. Mess room accommodation has been provided, with an attendant in charge.

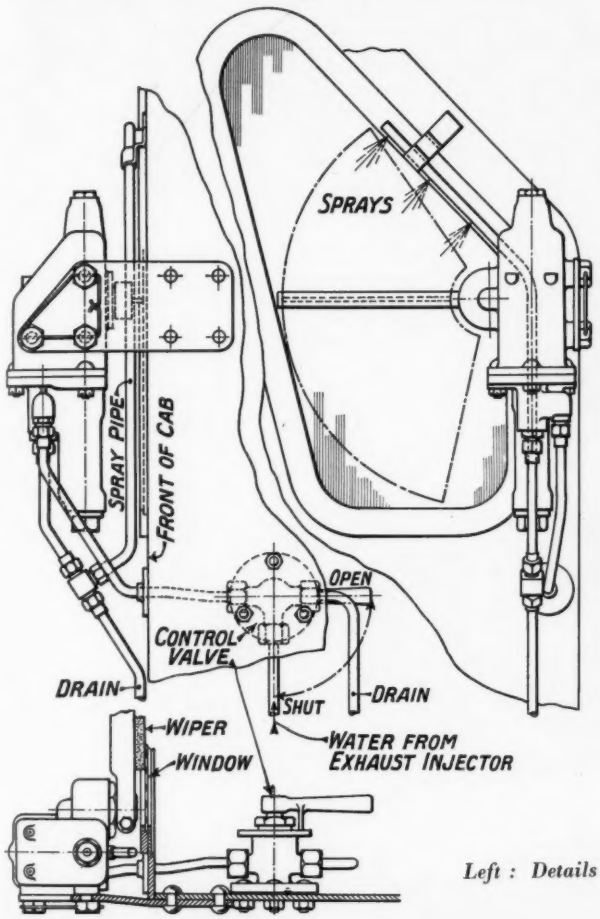
The shops are built on modern lines. There is lavatory accommodation with hot and cold water for washing, in both blocks of buildings. The lighting, both by day (as may be seen from the pictures) and by night, has been carefully planned to give the best possible effect. Heating by radiators and good ventilation are provided. There is ambulance accommodation in a room equipped with all necessary appliances, including hot and cold water and a spray. The shops are painted and distempered in light colours, and are kept scrupulously clean and tidy. Everything has a place, and occupies it. Two motor lorries are allocated to the shops and they are housed in a brick garage with an inspection pit and a bench for carrying out small repair work.

Another view of the yard showing wood-working shops and mobile crane loading timber

SCREEN WIPERS FOR LOCOMOTIVES

A mechanical device which sprays and wipes cab windows

REFERENCE was made on page 256 of our issue of February 17 to a type of screen wiper for locomotives in which water is impinged against the cab windows and a wiper arm simultaneously removes obstruction and dullness caused by smoke, grit and grease, and this resulted in our being asked for details of the appliance.



Left : Details of the Booth-Jones mechanical wiper as applied to Southern Railway locomotive

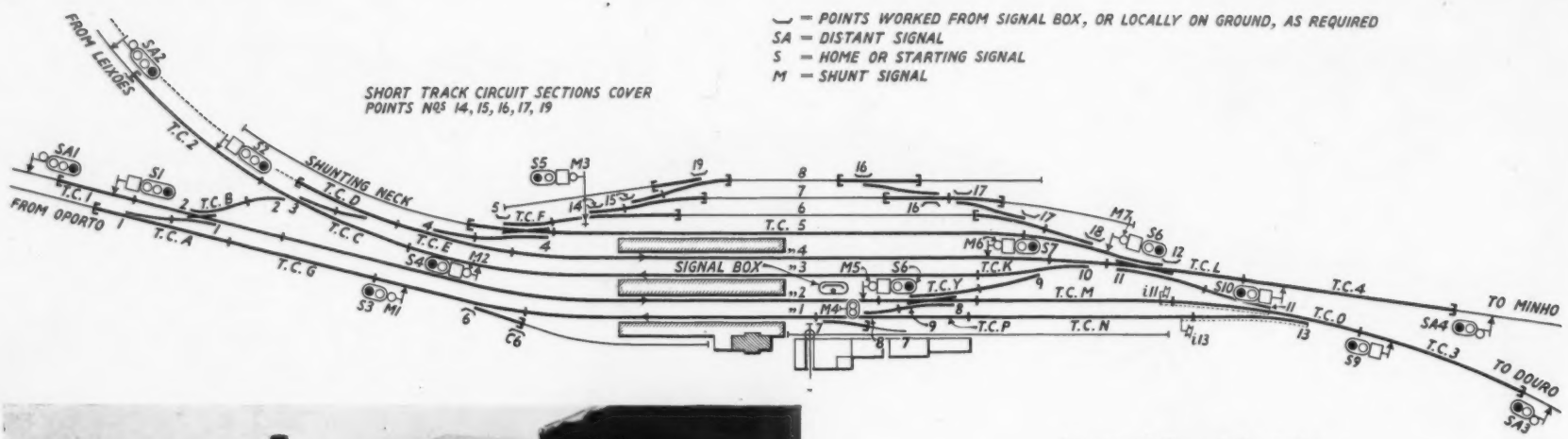
Above : Cab window with wiper attached

We therefore now reproduce a drawing and photograph showing how the device is fitted to the cab window of a locomotive, No. 852, *Sir Walter Raleigh*, of the Southern Railway " Lord Nelson " class.

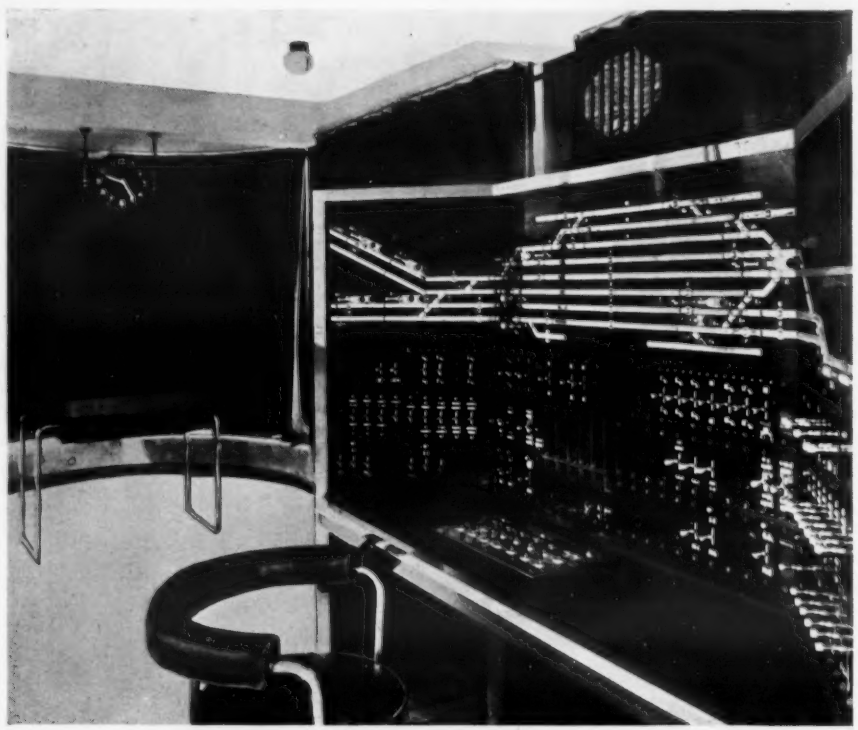
The complete apparatus consists of a wiper unit, a hot water window sprayer, a control valve and suitable piping. When the control valve is opened the action is entirely automatic and requires no further attention from the driver. The hot water is taken from the boiler feed pipe at any suitable point between the injector and the clack box and led by means of a $\frac{3}{8}$ in. (0·4) copper pipe to the control valve situated in the cab. In the closed position this valve connects the wiper supply pipe with the atmosphere, thus effectively draining all water from the pipe and preventing freezing trouble. From the control valve the water passes to the wiper unit which incorporates a hydraulic double-acting piston actuating a rack and pinion, with the wiper arm bolted to the latter. The piston is controlled by a piston valve and " snap-over " valve gear, which ensures that the mechanism can never be left in the dead-centre position.

After leaving the cylinder the exhaust water passes down the pipe to a tee fitting which divides the flow, part being allowed to drain away whilst the remainder is diverted, by means of a restriction washer, to a spray pipe alongside the cab window. The force of the spray depends on the speed at which the wiper is set to run by the control valve, and by closing this valve in the necessary degree to obtain the lowest speed, the spray action can be eliminated if so desired. The wiper unit is provided with drip valves which drain away all water when the pressure is shut off. Suitable oiling points are provided and protected by wooden plugs in the usual manner. The wiper unit is carried by means of a plate, bolted or riveted to the cab side and adjusted to give a correct pressure on the wiper arm, the latter being itself pivoted in order to bear squarely against the window.

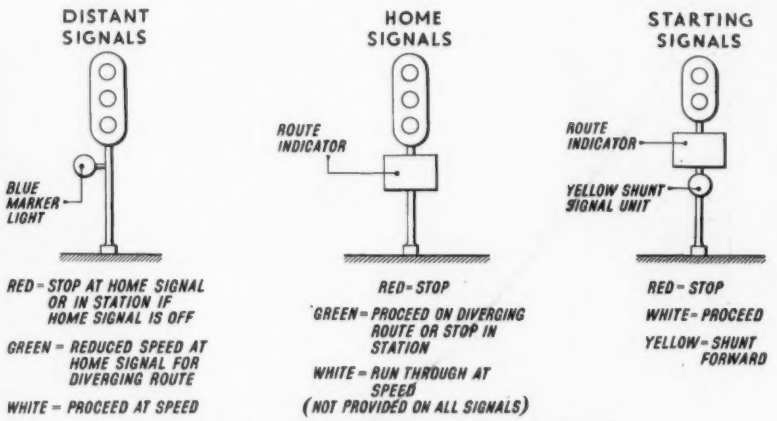
We have seen the device in use and so far as our somewhat limited observations went it appeared to function very satisfactorily. It is patented under the name of the " Booth-Jones mechanical wiper for cab windows of locomotives."



Layout of Ermezinde station



Panel apparatus in signal box


DISTANT SIGNALS
BLUE MARKER LIGHT
RED = STOP AT HOME SIGNAL OR IN STATION IF HOME SIGNAL IS OFF
GREEN = REDUCED SPEED AT HOME SIGNAL FOR DIVERGING ROUTE
WHITE = PROCEED AT SPEED
HOME SIGNALS
ROUTE INDICATOR
RED = STOP
GREEN = PROCEED ON DIVERGING ROUTE OR STOP IN STATION
WHITE = RUN THROUGH AT SPEED
(NOT PROVIDED ON ALL SIGNALS)
STARTING SIGNALS
ROUTE INDICATOR
YELLOW SHUNT SIGNAL UNIT
RED = STOP
WHITE = PROCEED
YELLOW = SHUNT FORWARD
NOTE—ISOLATED SHUNT SIGNALS SHOW A VIOLET LIGHT FOR STOP

Portuguese colour-light signal aspects

POWER SIGNALLING IN PORTUGAL (*See article opposite*)

POWER SIGNALLING IN PORTUGAL

Panel installation at Ermezinde station

(*See illustrations opposite*)

DURING the last few years the Portuguese Railways Company has been adopting power signalling where the reconstruction of stations affords opportunity of obtaining simpler and economical working by so doing. Three all-electric installations are in service, and another is being completed. Two electro-mechanical plants are also under construction. The all-electric plant at Ermezinde station, supplied by the Spanish Ericsson Company, has been provided with a panel apparatus instead of the ordinary type of power frame previously used, and by the courtesy of the editor of the *Ericsson Review*, Herr Sven Hansson, the accompanying illustration of the interior of the signal box is reproduced; the principal details which follow are also taken from that journal.

Portuguese Signal Aspects

Mechanical signalling is by single wire and rodding, as in Great Britain, with the so-called Saxby style of locking frame, or, in many places, Bouré key locking equipment. Block working is carried out exclusively by telephone or telegraph, with the plain train staff on one single line section. The ordinary stop signals are two-position lower quadrant semaphores, showing a double red light for "stop" and white for "proceed," arranged in a vertical row at facing junctions according to the number of routes. As trains keep to the left the arms usually point to the left of the posts but are sometimes reversed where it is thought more convenient, as on setting back signals. Distant signals are either red discs, like the French outer signals, showing a red or a white light, or—more recently—three-position upper quadrant semaphores. These have green arrow-headed arms and indicate "home signal at stop" (red light), "clear to run into station" (green light), or "clear to run through" (white light), being derived from Belgian practice. Red discs are often followed by a green one, forming a reduced speed signal, at the approach to junctions and loop lines, and are preceded by approach warning boards. Where colour-light signals are used all signals show one red light when "on," distants carrying a blue distinguishing marker light. Shunt signals then show violet for "stop" and yellow for "shunt forward." Multiple lamp route indicators are also used, and various types of point indicators.

The Ermezinde Installation

The layout of this installation appears on the accompanying diagram. The station has an important interchange traffic between the double line from Oporto and the single lines to Leixões, Minho, and Douro; the Leixões line is to be doubled later, for which provision has already been made in the signalling equipment. The whole are controlled from a new three-floor reinforced concrete signal box, glazed all round at the top and commanding an excellent view of the lines. The ground floor contains the cable inlets, switchboard, reserve power plant and fitter's room; on the first floor are housed the relays and associated apparatus and accommodation for the staff. The panel control board is arranged round a flat desk (as at Leeds, L.N.E.R.), with track diagram formed of chromium-plated bars on which the condition of all signals, points and track circuits is reproduced. Below this are the miniature switches controlling the apparatus outside. Individual working of functions has been adopted, with complete electric route locking released by the passing train. Telephone communication is provided with adjacent stations, the stationmaster, and several points in the station and yard, for easy exchange of instructions during shunting. Track circuits, fed by low voltage a.c., are provided throughout interlocking limits, except in lines 6, 7, 8, which are mostly used for stabling vehicles. Emergency release of a route is by a sealed key.

Signals and Points

All signals are colour-lights, with multiple-lamp route indicators where necessary; the various aspects are given on the diagram. There is only one independent shunt signal, No. *M4*, but yellow shunt-light units, not locked by track circuit, are provided on all starting signals. All points in the station itself are operated directly from the signal box, but certain others can be operated locally by a shunter by means of a special control switch located on a pillar nearby, if required. Access to this is by means of a key supplied to certain persons only. This arrangement enables shunting to be carried out more easily, and can, of course, be used only if permission is given by the signalman, which he cannot do unless everything is right. Point machines operate on 220 volts a.c. and have internal locking of the tongues, with the usual detection, and emergency hand crank operation.

Power Supply

Power is normally taken from neighbouring electricity mains, but there is an emergency power set consisting of petrol engine and a.c. generator with automatic start-up. The installation comprises 28 pairs of points, 21 signals, and about 300 relays and the total length of single conductors comes to about 155 km. (96 miles). It appears likely that further installations will be decided on in Portugal before long.

"En Avant du Signal"

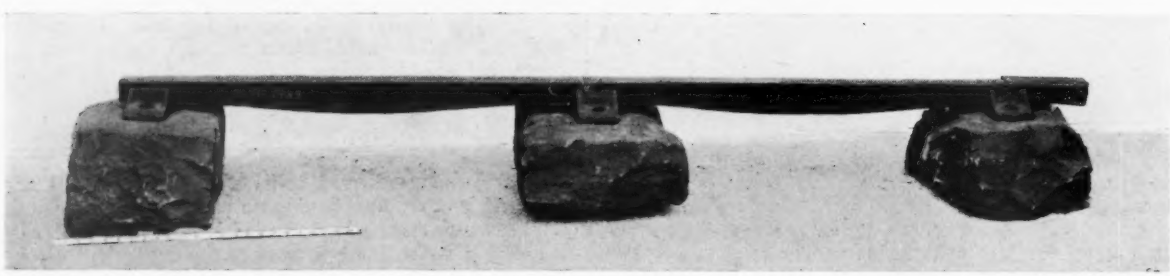
It is of course, common experience that words and phrases may be correctly translated grammatically into another tongue but yet convey a wrong idea, due to the opposite use of the same term in different countries, of which a translator may at times be unaware. An instance of this is often seen in the mistranslation of the French phrase *en avant du signal* as "in advance of the signal" when it actually means what is called in Great Britain "in rear of the signal," the idea contained in the word *avant* being exactly the reverse on the railways of the two countries. So, too, the expression *signal avancé* is often wrongly rendered as "advanced signal," whereas the French signal referred to is a form of outer home which may be over-run, having no equivalent in England. Sometimes, however, *signal avancé* is translated as "distant signal," which is again wrong, the equivalent of our distant signal being a *signal annonciateur* in France. Nevertheless in French Switzerland, where the French *disque à distance* does not exist, the term *signal avancé* may be heard applied to a distant signal, as understood here, which shows how easily mistakes can be made.

XUM

Above : Reproduction of an old view showing Normanton station on the North Midland Railway in 1841

Left : Working model of Southampton Docks for exhibition at the New York World's Fair. There are 25 *models of famous liners, floating in water, and some of them controlled by electro-magnets on tracks beneath the tank so that they can be moved to and from their berths*

(*see page* 479)



Specimen of John Birkinshaw's type of fish-bellied wrought-iron rail of about 1825 *in the Science Museum, London, to which it was presented in* 1892 *by Messrs. J and C. Thompson. These rails were rolled in* 15*-ft. lengths, had square ends, and were fastened by through pins to* 6*-lb. chairs which were secured to stone sleeper blocks placed* 3 *ft. apart. The head of the rail is* $2\frac{1}{4}$ *in. wide. Both intermediate and joint chairs are shown*

RAILWAY NEWS SECTION

PERSONAL

The Rt. Hon. Lord Hailey, G.C.S.I., C.G.M.C., G.C.I.E., has been appointed a Director of Vickers Limited.

From *The London Gazette* of March 7: Regular Army, Supplementary Reserve of Officers, Royal Engineers, Transportation: Captain P. D. G. Buchanan, R.E., relinquishes the appointment of Adjutant (January 1). Lt. W. T. Calvert, B.A., R.E., to be Adjutant and is granted the temporary rank of Captain in the Supplementary Reserve of Officers (with pay and allowances of a Lieutenant) whilst holding the appointment (January 1).

Awards (dated March 2) of Imperial Service medals have been made by the King to six employees in the Department of Road Transport and Tramways, New South Wales.

The Secretary to the Ministry of Transport makes the following announcement:—

The Minister of Transport has been informed by the Appointing Trustees acting under the provisions of Section 1 of the London Passenger Transport Act, 1933, that they have reappointed Sir Henry Maybury to be a Member of the board for a further period of three years from May 18, 1939, and have appointed Colonel Forrester Clayton to be a Member of the board for a similar period.

Sir Henry Maybury was formerly Director General of Roads in the Ministry of Transport, and was Chairman of the London and Home Counties Traffic Advisory Committee from 1924-1933. He was appointed an original Member of the London Passenger Transport Board on May, 18, 1933, for a period of three years, and was appointed for a further three years in May, 1936.

Colonel Forrester Clayton has been Chairman of the Middlesex County Council since 1937, and was High Sheriff of Middlesex from 1934-1935. He succeeds Sir Edward John Holland as a Member of the board. Sir Edward Holland's present three-year term of office expires on May 17.

The late Mr. Samuel Bower, whose death on September 19 last was recorded in our issue of September 23, left personal estate valued at £22,449 (£11,012 net). Mr. Bower was Chief Accountant of the former Midland Railway from 1917-20, and continued for some years as Consulting Accountant.

Mr. W. A. Moyers, B.A., B.A.I., M.Inst.C.E., Assistant General Manager (Technical) of the South African Railways & Harbours, has retired on reaching the age limit. He was born in Ireland and graduated in arts and engineering at Dublin University. The early years of his professional career were spent on railway and harbour construction work in Ireland and England. He came to South Africa in 1910 for Pauling & Co. Ltd. on the construction of the Selati Railway. Mr. Moyers joined the S.A.R. service as District Engineer on the George—Oudtshoorn construction in 1911, and was transferred to Idutwya as acting Resident Engineer in 1913. In 1915 he returned to England for war service on the western front with the Royal Engineers, mostly in the Ypres district, until the armistice, when he was demobilised with the rank of Major. He was mentioned in despatches. On his return to South Africa, Mr. Moyers was appointed Engineer-in-Charge of the Mooi River—Estcourt doubling. In 1920 he became Resident Engineer at Pietermaritzburg and in the next five years saw service in various parts of Natal as Resident Engineer on the Nottingham Road—Lady-smith survey, the Cato Ridge—Clairwood deviation, and the Pietermaritzburg—Glencoe junction electrification. In 1925 he was appointed Professional Assistant to the Chief Civil Engineer; in 1928 Inspecting Engineer; in 1934 Chief Civil Engineer; and in 1937 he was appointed to the dual post of Assistant General Manager (Technical) and Chief Civil Engineer. Last summer he relinquished the post of Chief Civil Engineer to Mr. J. M. Greathead.

Mr. W. A. Moyers

Assistant General Manager (Technical), South African Railways & Harbours, 1937-39

INDIAN RAILWAY STAFF CHANGES

Mr. E. B. N. Taylor has been appointed to officiate as Chief Engineer, N.W.R., *vice* Mr. J. Mackinnon, who, as reported on page 424 of last week's issue, has been granted leave preparatory to retirement as from April 19.

Mr. R. G. Manson, Chief Operating Superintendent, A.-B.R., having returned from leave, resumed his duties on February 7.

Mr. J. H. Bavin, Chief Auditor, A.-B.R., has been granted nine months' leave as from February 8.

Mr. N. H. Lewis has been appointed to act as Chief Auditor in place of Mr. Bavin.

Dr. S. C. Chatterjee, Chief Medical Officer, E.B.R., has been appointed to officiate as Chief Medical Officer, E.I.R., as from December 31 last, in place of Dr. F. E. R. Laborda, who has gone to the E.B.R. in a similar capacity.

Mr. H. Merson Davies, Deputy Chief Mechanical Engineer, E.I.R., was permitted to retire from Government Service on January 10.

Mr. R. V. Hitchcock has been confirmed as Deputy Chief Engineer, G.I.P.R.

Mr. R. Whitworth has been confirmed as Signal Engineer, E.B.R., as from November 11 last.

On return from leave, Dewan Bahadur Mathra Das has been appointed to officiate as Deputy General Manager, Personnel, E.B.R., as from December 9 last.

Mr. R. H. Pitts will retire tomorrow (Saturday) from the post of Chief Stores Superintendent, London Passenger Transport Board, which he has held since the formation of the board in 1933. Mr. Pitts joined the Underground group of companies in 1919 as Personal Assistant to the Chairman—then Sir Albert Stanley. His previous railway experience had been in the Engineer's Department of the Great Northern Railway at King's Cross, and

Photo] [*Lafayette*

Mr. R. H. Pitts

Chief Stores Superintendent, L.P.T.B., 1933–39

subsequently with the North Eastern Railway at York. During the war Mr. Pitts was loaned to the Ministry of Munitions, becoming a Section Director in the Gun Ammunition Fipping Department, and at the date of the Armistice was transferred to a similar position in the Central Stores Department. In 1922 Mr. Pitts was appointed Staff Officer of the Underground companies, and in 1928 was made Chief Stores Superintendent, taking over a similar position with the L.P.T.B. when it was formed in 1933.

Mr. P. Croom Johnson has been appointed to succeed Mr. R. H. Pitts as Chief Stores Superintendent, London Passenger Transport Board. Mr. Croom Johnson was educated at Clifton College, and after six years of general experience in the quarry industry he was in 1912 appointed Assistant Engineer in the Tramways and Highways Department of the City of Liverpool. From 1915 until his demobilisation in 1919 he saw war service, gaining a Commission in the Royal Garrison Artillery and being mentioned in despatches. He then resumed his former post at Liverpool. In 1923 Mr. Croom Johnson was appointed Resident Engineer for the Ministry of Transport on the Purfleet arterial road, and was later selected by the Ministry to take sole charge on the site of the structural alterations to the Menai suspension bridge. In 1924 he was appointed Assistant Engineer in the Tramways Department of the London County Council, and was appointed Permanent Way Engineer, Tramways, on the formation of the London Passenger Transport Board. In January of last year Mr. Croom Johnson was made Technical Officer in the Chief Stores Superintendent's Department, the position he has held up till now. He is a Member of the Institution of Civil Engineers, and of the Institution of Municipal and County Engineers.

Mr. P. Croom Johnson

Appointed Chief Stores Superintendent, London Passenger Transport Board

Mr. James Boot

Elected President, Institution of Railway Signal Engineers

Mr. James Boot, who, as recorded in our issue of February 24, has been elected President of the Institution of Railway Signal Engineers for the coming year, is Signal Engineer of the General Railway Signal Co. Ltd. He served in the Telegraph Department of the former Great Northern Railway from 1896 to 1905, when he joined W. R. Sykes Interlocking Signal Co. Ltd., to develop the Sykes electro-mechanical system, and became Electrical Engineer to that company. He was also Personal Assistant to the late Mr. W. R. Sykes, Jr., Managing Director of the company at that time. Mr. Boot joined Siemens Bros. & Co. Ltd. in 1910 as Commercial Assistant in charge of sales of all electrical material to the railway companies. In 1916 he was appointed to the London & South Western Railway as Technical Assistant to the late Mr. A. H. Johnson, and on his death became Chief Assistant for Signals & Telegraphs under the late Mr. W. J. Thorrowgood. He resigned to rejoin Siemens Bros. & Co. Ltd., and was subsequently appointed Chief Engineer to the Siemens & General Electric Railway Signal Co. Ltd. In 1930 he resigned to take up the position of Chief Engineer to the General Railway Signal Co. Ltd., and his title was changed to Signal Engineer at the beginning of 1937.

Lafayette] [*Dublin*

Mr. H. R. Browne

Appointed Assistant Civil Engineer, Great Northern Railway (Ireland)

Mr. H. R. Browne, who, as recorded in our issue of March 3, has been appointed Assistant Civil Engineer, Great

Mr. Richard W. Meredith

Appointed Assistant Mechanical Engineer & Works Manager, Great Northern Railway (Ireland)

Northern Railway (Ireland), obtained an Engineering Degree at Trinity College, Dublin, in 1908. He served for six years as Surveyor in the Irish Land Commission until 1915 when he was appointed Surveyor to the Great Northern Railway (Ireland) under Mr. F. A. Campion, Chief Engineer. While in that position he became an Associate Member of the Institution of Civil Engineers. He was responsible, during his appointment as Surveyor, for the detail drawings and layout of crossing work. In 1933 Mr. Browne was appointed Permanent Way Assistant to Mr. G. B. Howden, the position which he held until his present appointment.

Mr. Richard W. Meredith, A.R.C.Sc.I., who, as recorded in our issue of March 3 has been appointed Assistant Mechanical Engineer and Works Manager, Great Northern Railway (Ireland), was educated at Aravon School and at the Royal College of Science in Ireland, where he was awarded an Industrial Bursary for two successive years by the Royal Commissioners for the Exhibition of 1851. He entered the service of the Great Southern & Western Railways in 1912. In March, 1916, Mr. Meredith received a Commission in the R.A.S.C., and served three years as a Workshops Officer in a mechanical transport section attached to siege artillery on both French and Italian fronts. In 1919 he returned to the Great Southern & Western Railways as Materials Inspector, becoming Running Assistant to the Chief Mechanical Engineer in 1922. After formation of the Great Southern Railways group, Mr. Meredith was appointed Assistant Works Manager at Inchicore, and joined the Great Northern Railway (Ireland) as Works Manager at Dundalk in January, 1926. This is the position Mr. Meredith had held up to his present appointment.

Mr. Arthur G. Hunt has been appointed a Director of the Central Uruguay Railway Co. of Monte Video Ltd.

Mr. H. B. Beeson, of the Southern Railway Brussels office, has been appointed Assistant Agent, Cologne, as from January 1 last.

As we close for press we are glad to learn that Lord Ashfield, Chairman of the London Passenger Transport Board, who recently underwent an internal operation, is reported to be going on very well.

INSTITUTION OF CIVIL ENGINEERS

The following are among those recently elected associate members of the Institution of Civil Engineers:—

Mr. W. J. Leith, District Engineer's Office, Cape Town, South African Railways & Harbours.

Mr. J. D. Marshall, Chief Engineer's Office, Bulawayo, Rhodesia Railways Limited.

JOINT ROAD-RAIL CONSULTATIVE COMMITTEE

The railway companies have nominated as their eight representatives to the joint consultative committee representing both road hauliers and railway companies the following: Mr. A. E. Sewell, Goods Manager, Scotland, and Mr. A. J. Forbes Smith, Assistant to the Chief General Manager, L.N.E.R.; Mr. D. C. McCulloch, Assistant to the Chief Commercial Manager, Mr. W. Yeaman, Commercial Manager, Scotland, L.M.S.R.; Mr. F. C. A. Coventry, Road Transport Superintendent, Mr. H. W. Payne, Principal Assistant to the Chief Goods Manager, G.W.R.; and Mr. W. M. Perts, Commercial Superintendent, and Mr. J. C. Chambers, Road Transport Liaison Officer, Southern Railway.

Sir Ralph L. Wedgwood has been elected Chairman of the Council of the Air Raid Defence League. Other members of the league are Lord Hailey (Chairman), Lord Hailsham, Lord Stamp, the Archbishop of Canterbury, Lord Lonsdale, Sir Walter Monckton, Cardinal Hinsley, Sir John Salmond, and Mr. Augustus John.

The late Mr. W. T. Griffiths, President of the National Union of Railwaymen, whose death was recorded in our issue of December 30 last, left estate of £1,083 (£980 net).

Soviet Ambassador on British Trade

At the annual dinner of the Machine Tool Trades Association at Grosvenor House last Wednesday, over which Mr. Harold Butler presided, M. Maisky, the U.S.S.R. Ambassador, referring to the forthcoming visit to Moscow of Mr. R. S. Hudson for trade talks, said that while Britain's problem was that of increasing exports, that of Soviet Russia was one of internal trade. Thus there was no cause for economic conflict between the two countries, and he had great hopes of the development of mutual trade.

CONTAINERS IN FRANCE.—In the article entitled "Containers in France," published in the Road Transport Section of our issue of March 10, we should have acknowledged the courtesy of the Editor of *France-Transports* for permission to reproduce some of the illustrations.

AIR LINKS BETWEEN THE ISLE OF MAN AND THE MAINLAND.—A seven-year licence has been granted to Isle of Man Airways Limited to operate services between the Isle of Man and Manchester *via* Blackpool and Liverpool. A three-year licence for the Isle of Man-Belfast direct service, a two-year licence for the Isle of Man-Carlisle direct service, and a five-year licence for the Isle of Man-Glasgow direct route, have also been granted.

L.M.S.R. Manchester Goods Commercial Dinner

The annual dinner of the Commercial Department, District Goods Manager's Office, Manchester, L.M.S.R., was held on March 6, at the Midland Hotel, Manchester, under the chairmanship of Mr. H. G. Humphreys, District Goods Manager. The function was attended by over 200 of the principal business men of Manchester, Salford, and district.

Mr. Humphreys, proposing the toast of "Our Guests," extended a very cordial welcome to those present, and took the opportunity of thanking them for their support to the L.M.S.R. throughout the year 1938.

Mr. E. Raymond Streat, C.B.E., responded to this toast, and made appropriate reference to the close connection between the L.M.S.R. and the Manchester Chamber of Commerce, of which he is the Secretary and Director.

Sir Frederick J. West, C.B.E., J.P., Chairman of the Manchester Ship Canal, proposed the toast of "The London Midland & Scottish Railway," and in his remarks made special and complimentary comparisons with the railway systems of other countries and those of the Colonies, where he had travelled extensively. He also referred to the railway companies' appeal for a "square deal," expressing sympathy with them in their endeavours.

Mr. T. E. Argile, Acting Chief Commercial Manager, L.M.S.R., in his reply to the toast, referred to the absence of Mr. Ashton Davies, stating it was expected he would soon return to his duties, and had he been in good health would certainly have been present. Mr. Argile expressed his pleasure at being amongst the members of the trading community of the city, and referred to the fact that although he was not a Manchester man, yet could claim some connection with Lancashire, as he had at one time been District Goods Manager at Liverpool. He also referred to the companies' application for a "square deal" and drew a parallel with the application of the cotton trade to the Government for sanction of their "Enabling Bill." He trusted that whilst he could not claim the acquaintanceship of every member present, as Mr. Ashton Davies could, opportunities would arise for this to be remedied in the future.

Sir Francis Joseph, K.B.E., D.L., said he did not know whether to speak as a Director of the L.M.S.R. or as a trader, bearing in mind his association with the coal trade, and in the course of his remarks made some witty comments on points raised by previous speakers.

The proceedings terminated with a vote of thanks to the Chairman, proposed by Mr. O. J. Knudsen, which was received with acclamation and musical honours.

XUM

RAILWAY AND OTHER MEETINGS

London Midland & Scottish Railway Company

The adjourned annual general meeting of the London Midland & Scottish Railway Company was held in the Great Hall, Euston station, N.W.1, on Friday last, March 10, Lord Stamp, Chairman of the company, presiding.

The Secretary (Mr. O. Glynne Roberts) read the advertisement of the adjourned meeting.

The Chairman: Ladies and gentlemen, several public comments indicate a certain misconception about the position of a railway company which I ought perhaps to remove. Parliament, in settling the constitution of large statutory corporations has, in its wisdom, with a precision and particularity that does not apply to ordinary limited liability companies, ordained that general business only shall come before general meetings of the company. Parliament has gone further, and has defined what constitutes general business. It is not for me to question the convenience or value of this course, but it is clearly my duty to see that our proceedings conform to the law. At the annual general meeting of the company on Friday, February 24, in accordance with these provisions and acting on legal advice, I had to rule out of order a certain resolution. The ruling that a proposition is out of order at any time, however, conveys no implication whatever as to whether its object is thought to be a reasonable or an unreasonable one in itself. Lest this special condition should seem to a shareholder to cramp his rights, I have never desired to use it to narrow discussion or to check criticism. Indeed, I would go so far as to say that the very fact that any particular proposition cannot be legally handled by way of resolution and vote at the meeting, throws upon the board the special responsibility of considering its suggestions upon their merits and taking any appropriate action. So much for the general position.

In this particular case the proposition was that no director should retain his seat on the board after reaching the age of 70, and upon this being declared out of order the proposer adopted the course of opposing the re-election of Sir Guy Granet and, presumably by inadvertence, also Mr. Lionel Hichens. No more unfortunate application of the proposed rule could have happened, and no better example of the serious cost to the company of this fixed principle without discrimination could be given than for the loss of Sir Guy Granet's services to have been its first consequence. Sir Guy Granet is, by general consent one of the most able and experienced personalities in the railway industry today; he has been Secretary of the Railway Companies' Association, General Manager of the Midland Railway, Chairman of the Midland Railway, and Chairman of this company, and all the world knows and remembers with gratitude what he has done for the railway interest. Quite recently he was asked by the South African Government to be Chairman of a special railway inquiry; and his chairmanship of our traffic committee today keeps him in the forefront of usefulness to us. But these facts were probably not in the mind of the opposer. Whatever may have actuated the opposer, I—with greater responsibility—was faced with the definite fact that failure to re-elect would in this instance, and without any general or compensating issue being involved, be a distinct injury to the company, and it was, therefore, my duty to use the proxies in favour of the re-election.

I pointed out that the directors had proxies which would over-rule the objection, and one of his own supporters appealed to the objector to withdraw the demand for a poll. He preferred, however, to maintain his demand for the poll, which he is fully entitled to do, with the foregone result the company has been put to unnecessary trouble and you have been put to the inconvenience of coming here merely to hear the result of the poll. Because the majority of the shareholders have given their proxies to be used at the discretion of the existing administration, Mr. Wilson has said the proxy system must be altered; but here again I must remind you that the proxy system has been set up by Parliament, and is a safeguard for the large majority of shareholders against the sudden or ill-advised pressure of particular interests for special purposes, doubtless well meant, but not fully thought out. This kind of situation has arisen at Euston before, and the question has been thrashed out in the Courts, where the directors' action has been upheld. Now the only matter which can come before this meeting is for me to tell the result of the poll, and I have to announce that Sir Guy Granet and Mr. Hichens are re-elected directors of the company by 196,345 votes against 1,790, of which only 28 were formally valid, that is by a majority of over 196,000.

Before I bring the meeting to a close, I should like to give Councillor Wilson an opportunity of saying anything he likes on the subject that is before us, this poll and the proxies.

Councillor Wilson: Mr. Chairman, my lords, ladies, and gentlemen, it is my duty to oppose the entire bundle of the proxies. I sent in a resolution in writing by registered post in December that directors of 70 should retire. These proxies were sent out stamped, with stamped addressed envelopes, accompanied by a letter which said: "Sign the proxy and return if you do not intend being present"; then this is the most important of all, "The abridged statement of accounts will be forwarded to you in a few days." This gave the directors the opportunity of having the proxies in their hands before the poor stockholders got to know the financial position of the company. I think it is very wrong indeed; in fact it looks very cunning, and unjust and regardless of expense. Some years ago I spent £600 in fighting for a penny-a-mile and cash-on-delivery, and at that period our Chairman refused to take a poll. I was very disappointed. But I am going to say right here and now that he gave me an opportunity for two years to discuss that scheme before it was inaugurated, and I am very thankful for that opportunity.

Looking at the circumstances under which the poll was demanded I do feel that unfortunately they had never taken one before and they did not know how. On one door they put "for"; on the other they put "against." Here I collected my own votes and offered them to the Registrar and he said, "I am not having them." I look badly defeated, but when I tell you the story, I am not very much defeated. These proxies are signed by the stockholders at the meeting, and there are hundreds of them there which were never counted—never accepted. Therefore I think there is a legal question involved. Here I have a few of the 2,000 letters which I have received from old people. They say that they have had to sell their stocks for a few pounds in order to get their old-age pension. I serve on the Public Assistance Committee. When these people come before us we have to say: "Have you any means?" and they reply "Yes, we have so much railway stock." We say, "You have got to sell it. We cannot give you anything until you sell it." So they have to sell for £3 what they paid £100 for before they can get any public assistance. I think, Mr. Chairman, with all due respect to yourself, whom I greatly admire for many things, when these people write to me saying they did not know when they signed the proxies that there was a resolution before the meeting, and the directors had it but never told them—it was never on the agenda convening the meeting—so that poor people who sign blank cheques have got to be beaten by their own rod. Today at my expense I have had to put a sandwich man outside the Friends House to tell them that the meeting was being held here.

Mr. Chairman, ladies and gentlemen, I have never spent £400 with so much pleasure in my life. I am a blacksmith by trade and my wife stood behind

my anvil at the striker when I started business and made the money that I have put in this company and the London & North Eastern Railway, and therefore so long as I can find the money to fight for you I will do it. When the time comes when I cannot find any more money I want some of you younger fellows to come and take my job. When I get to 70 years of age which is what I call the allotted span of life, I hope I am able to retire—that is if I do not put any more money in railways. With all due respect to age, our Vice-Chairman who is over 80 years of age has to take over the business of the company when our Chairman is attending to other duties, and I hardly think it fair to himself. I think if I were 70 I should like to be out in the country or something like that. I do not wish to prolong the matter any further. I hope, seeing that this is a matter between the stockholders and the board and is not anything to do with the public outside, you will all agree that this can be heard by a Judge in Chambers, because it is only a technical point. We wish to decide between the board themselves and us unfortunate stockholders.

The Chairman: Councillor Wilson, I am glad to hear your concluding words because the matters which you have raised about the system of proxies and the like are legal questions, and if we can leave them in the hands of our legal advisers and your legal representatives to take them as far as you wish, then that is all that we can do at this meeting. You really have in your speech covered quite fully all that we are entitled to discuss at this meeting, and that really concludes the only business we are legally entitled to handle; so I declare the meeting closed now.

Councillor Wilson: Ladies and gentlemen, there is just one point. It does not matter whether you are playing football or anything else, we have got to try to play cricket. I have spent as much money as I can afford on this particular battle and therefore I want you to say, ladies and gentlemen—it is up to you entirely—whether I have got to pay or whether—it is not a lot of money, but still it is there—the company has got to pay for your case being heard in Chambers. It is entirely up to you. Are you in favour that I should pay or the company? (Cries of "the company.") Mr. Chairman, you have an opportunity of doing something of which you will be proud instead of putting the expenses on to me.

The Chairman: Councillor Wilson, I am not sure that what you have proposed is legal. That is a matter also which I will put to our legal advisers. We have really dealt with all the business that this meeting is competent to deal with by law, and I declare the meeting over.

After the Chairman and directors had retired, the shareholders formed themselves into a meeting and, having elected Mr. A. P. Illiffe, of Oxford, to the chair, proceeded to discuss the means by which an extraordinary general meeting could be called for the purpose of passing a resolution that directors should retire at the age of 70. With this in view, it was agreed that Councillor Wilson should be given support in his campaign; and the shareholders present were invited to hand their names and addresses to him, and either then or at some future date to contribute towards the cost.

Isle of Man Railway Company

The annual general meeting of the Isle of Man Railway Company was held at the company's offices, Douglas, on March 1, Mr. R. Q. Hampton, M.H.K., Chairman of the company, presiding.

The Secretary and Manager (Mr. A. M. Sheard) read the notice convening the meeting.

The Chairman, in moving the adoption of the report and accounts, said that 1938 was a very disappointing year. It was one of successive crises in European affairs which overshadowed the summer season, and with a general set-back in trade seriously reduced the number of visitors to the Island. Many intending visitors cancelled their holidays altogether, and others did not go so far afield. The weather was less favourable than in 1937, and cheap day excursions by steamer took visitors away to spend money at competitive resorts which would otherwise have been spent in the Island. The result was a decrease of 46,028 passengers carried on the railway. Passenger traffic receipts showed a decrease of £1,948, although at a few stations there was an improvement in local traffic. Parcels receipts were at about the same level as in the previous year. Receipts from merchandise and minerals were down £631, representing in all 4,060 tons less weight carried, but several classes of traffic showed an appreciable increase. Under rents there was an increase of £436, accounted for by improved results at Glen Wyllin. In expenses the higher cost of coal was largely offset by savings in other directions.

The report and accounts were unanimously adopted.

Birmingham Railway Carriage & Wagon Co. Ltd.

Mr. Bernard D. F. Docker, J.P., Chairman of the company, presiding at the annual general meeting on March 2 of the Birmingham Railway Carriage & Wagon Co. Ltd., said that after so many lean years it was very gratifying to record a substantial increase in the trading profit from £56,568 to £151,963. A sum of £33,866 had been expended during the year on additions to buildings, plant, &c. The works had been maintained in a high state of efficiency, the cost of which had been charged against revenue. The nature of the business of the company was such that they had to look a long way ahead, consequently they had in the past pursued a prudent policy in conserving their resources and replenishing their reserves. Stockholders in several recent years had received dividends, the payment of which had only been made possible by this policy.

During the past year the company had inaugurated a staff contributory pension scheme, which provided a pension for all members of the staff, together with a life insurance policy whilst in the employ of the company. A substantial sum had been contributed by the company to ensure that the older members of the staff would ultimately have a pension equivalent in amount to that to which they would have been entitled if they had started contributing from the age of 40.

The company had a fair amount of orders on the books. Until there was an improvement in the traffics of the home railways it was unlikely they would place many orders for new rolling stock. Notwithstanding the ever-increasing handicap of rising costs, subsidised competition, and a host of other aggravating embarrassments, 25 per cent. of the company's output last year went overseas.

The report and accounts were unanimously adopted.

Exports of Railway Material from the U.K. in February

	Feb., 1939	Feb., 1938	Two Months Ending Feb., 1939	Feb., 1938
	£	£	£	£
Locomotives, rail	147,860	118,637	285,083	250,541
Carriages and wagons	166,948	166,146	372,090	317,968
Rails, steel	44,582	102,409	103,903	200,368
Wheels, sleepers, fishplates and miscellaneous materials	144,222	161,891	311,975	319,083

Locomotive and rail exports included the following:—

	Locomotives		Rails	
	Feb., 1939	Feb., 1938	Feb., 1939	Feb., 1938
	£	£	£	£
Argentina	5,969	8,273	3,599	4,362
Union of South Africa	—*	—*	9,990	33,242
British India	30,576	5,248	13,911	7,037

* Figures not available

Indian Railway Budget

Sir Thomas Stewart, Member for Railways and Communications in the Viceroy's Council, who vacates his office in April to assume the governorship of Bihar, presented a surplus railway budget in the Central Legislative Assembly on February 13. On the same day the Chief Commissioner of Railways introduced the railway budget in the Council of State.

Successive Years of Surplus

In the revised estimates for the current year, the gross traffic receipts from State-owned lines are expected to amount to Rs 94⅜ crores* against the actuals for 1937-38 of Rs. 95 crores, and against the original estimate of Rs. 94¼ crores. The trend of passenger and goods receipts, considered separately, has shown unusual variation. Up to July 10, 1938, an improvement of passenger traffic was accompanied by a deterioration of goods traffic. By January 10, 1939, the position was completely reversed, goods earnings having gone up and passenger receipts down.

The working expenses for 1938-39 (including depreciation) are now put at Rs. 63½ crores against an actual expenditure of less than Rs. 63 crores in 1937-38, and against the original budget estimate of Rs. 62½ crores. As the Railway Member pointed out, the increase is due, not to any relaxation of efforts for economy in operation, but to the combined effects of (*a*) a rise in the price of coal and materials; (*b*) increased train-mileage—with consequent increase in coal consumption and cost of repairs—run in order to provide improved facilities for the public and to meet competition; and (*c*) increased cost of maintaining rolling stock due to the diminished scale of purchases in the past.

Taking into account miscellaneous receipts and expenditure, the net railway revenue, which was estimated in February, 1938, to be just over Rs. 31¾ crores, is now reckoned at Rs. 31⅓ crores. Interest charges in the revised estimates will be Rs. 29¼ crores, and the net result is expected to show a surplus of a little more than Rs. 2 crores against the actual surplus of Rs. 2·76 crores in 1937-38, and against an originally estimated surplus of Rs. 2½ crores. The surplus meets in part the Central Government's bill of Rs. 4·42 crores in respect of railway contribution to the general revenues.

Estimates for 1939-40

In estimating the traffic receipts for 1939-40 at Rs. 94¾ crores, Sir Thomas Stewart referred to the general trade conditions and the international outlook which precluded the making of a forecast with any degree of confidence. Passenger receipts are expected to be slightly lower, and goods receipts slightly better than in the current year. Ordinary working expenses, it is expected, will be ¾ crore higher, the contribution to the Depreciation Fund standing at practically the same figure as in 1938-39. The net revenue after taking into account miscellaneous receipts and expenditure will just exceed Rs. 31 crores. Owing to a fall in the rate, interest charges will be somewhat lower, and the net result is expected to be a surplus of Rs. 2·13 crores, which will fall short of the payment of Rs. 4½ crores due to the general revenues.

* Rs. 1 crore = £750,000; and Rs. 1 lakh = £7,500

Capital Programme

The budget for 1939-40 provides for a modest capital programme for the construction of new railway lines. It relates mainly to three Sind projects mentioned in the previous year's budget. Of these the Sind Right Bank Feeder Railways, for which a sum of Rs. 73½ lakhs is provided, are expected to be completed next year. The Khadro—Nawabshah line will also make very substantial progress. The Pithoro—Tando Mithakhan Railway is, however, still under discussion with the Sind Government. A small sum is provided for beginning work on the Kashipur—Kalagarh project pending satisfactory conclusions of consultations between the Central Government and the Government of the United Provinces on this subject.

Open line works are programmed for 1939-40 on a larger scale than in the current year; the gross figures are Rs. 14 crores against Rs. 12¼ crores. About a crore is provided for the purchase of the South Bihar Railway for which the rental of £30,000 per annum paid by Government under the existing contract works out to about Rs. 4½ per cent. on the purchase price. Considering the present rate of interest, the purchase is a paying proposition. Rolling stock will absorb Rs. 5 crores, though this expenditure has been kept down to the absolute minimum compatible with traffic requirements. The last instalment of a contract entered into in 1937-38 with Indian wagon-building firms for the supply of 6,095 broad gauge general service wagons will fall due in 1939-40, and a sum of Rs. 1¼ crores has been provided for the cost of 2,500 wagons. Track renewals (4¾ crores) and bridges and other structural works (3¼ crores) form other major items of the programme. In accordance with the usual practice based on past experience the total demand under open line works has been reduced to Rs. 10¾ crores, of which a sum of Rs. 6¼ crores will be met from the Depreciation Fund.

General Remarks

After outlining the financial side of the railway budget, the Railway Member's speech included a statement of action taken during the year on recommendations in the Wedgwood Report, such as the strengthening of the commercial personnel by the creation of ten additional posts to improve commercial research, publicity, and direct commercial working, and increased advertising in the vernacular press. He also mentioned measures to check incivility and dishonesty among railway staff, and increased personal contact between railway executives and commercial interests. As an instance of the readiness of railways to meet the needs of the Indian public he mentioned the Rs. 4-lakh expenditure in connection with the *Kumbh Mela*, the gross earnings from which were about Rs. 28 lakhs.

Turning to the demand for a general reduction of rates as the only sure means of meeting road competition, he pointed out that this was not a measure that could be justified on any grounds, theoretical or practical, and showed that railways had not been slow to quote special rates whenever justified. To comply further with the Wedgwood recommendations railways were actively engaging in road services, he explained, and instanced the North Western Transport Co. Ltd. (described in THE RAILWAY GAZETTE of July 29 last) the results of the first six months of which were, he said, most encouraging. He also mentioned the later venture of the Madras & Southern Mahratta Railway into the same field of road transport. As another means of recapturing traffic lost to road concerns, he referred to the 11 railcars now being placed in service by the North Western Railway. Similar measures on the Bombay, Baroda & Central India Railway had, Sir Thomas explained, been thwarted by the recent rise in the prices of railcars. The Government of Bombay had agreed to meet the Government of India's objection to the construction of a trunk road parallel to the B.B. & C.I.R. main line, by promising so to control traffic on this new road—which is likely to be taken in hand shortly—that it would not prove a menace to the old-established railway.

In closing, the Railway Member discussed the question of Government purchase of company-worked systems, and pointed out that each individual case had to be considered on its merits from the financial point of view of the ratepayer.

AIR LINE TO THE HEBRIDES.—Western Isles Airways Limited has been granted a seven-year licence to operate services between Glasgow, Campbeltown, and Islay, and between Glasgow, Tiree, and the Outer Hebrides. A two-year licence for a new experimental service between Glasgow and Stornoway may be granted by the Air Transport Licensing Authority when an Air Ministry licence for a landing ground at Stornoway has been obtained.

London Transport—First Five Years

A paper on The First Five Years of the London Passenger Transport Board was read by Mr. Frank Pick, Vice-Chairman and Chief Executive Officer, London Passenger Transport Board, to the Institute of Transport in London on March 13. Mr. Pick began by saying that the board had barely completed five years of life before the circumstances in which it was begotten had faded from the mind, and the question was not whether it represented an advance on that which preceded it, but whether an advance could once more be made upon that which it was. It was, however, idle to complain of the fickleness of the critic; it was necessary always to be prepared to review and reform a public institution such as the board. Mr. Pick stressed the fact that he spoke for himself alone and said that the board was an experiment of considerable importance, behind which there had been a long period of trial of a common fund and a common management for some 60 per cent. of London's local passenger transport facilities. The Underground group of companies had made this advance towards a solution of London's traffic problem in 1915. The board, the logical expansion of an existing organisation, was an attempt to secure the advantages of nationalisation and yet retain the enterprise and vigour of a management as nearly akin as might be to that of private competitive business.

The primary task of the board was to serve the public, undisturbed by the desires of the stockholders. The lessons of the board were matters of considerable moment, for the future treatment of other public utilities turned upon a proper grasp and appreciation of what had happened in the case of London Transport. London Transport carried in the year ended June, 1938, 3,814 million passengers; its vehicles ran 567 million car-miles serving a population of nearly 10 million people. Although the board was the largest undertaking of its kind in the world, its size was not determined by a desire to aggregate local public passenger transport in a record breaking unit, but arose out of a consideration of the traffic problem which it was set up to solve. In 1933, when it was formed, the population of London had overlapped the boundaries of the Metropolitan Police area with its radius of 15 miles from the centre. In 1924, the London Traffic Act had already envisaged a larger area stretching out to 25 miles in nearly all directions. There was therefore nothing unexpected or novel in the definition of the London Passenger Transport Area under the Act of 1933. If anything, it might appear that at certain points the boundary of the London Passenger Transport Area had been drawn rather too tightly than otherwise; there was nothing extraordinary about an undertaking designed to serve a compact population which might eventually reach 12 million people. As it was, the boundaries of the London Passenger Transport Area were in some respects arbitrary, and questions had arisen about the service of small scattered communities just across them whose main movement was into the area. Some amendment of the Act of 1933 was required which would place a flexible rather than a rigid construction upon the boundaries and allow those boundaries to be modified to meet the growth of London. Whatever reasonable boundary were fixed for London, there would some day be a flow of population across it, and the board had still to find an equitable and agreed solution for it, having regard to the interests of the neighbours.

Nature of Board's Monopoly

In 1,550 of its 1,986 square miles of area the board had a monopoly of public passenger transport either directly or jointly with the main-line railway companies. It was a monopoly in the provision of service, not in the pursuit of profits; it was founded on liberality, not on restriction. In 1933-4 the car-miles run by the board in the public service were 515 millions or 55 per head of the population; in 1937-8 they were 567 millions or 58 per head of the population, and, moreover, the car-miles of 1937-8 were far better distributed and disposed to meet the public requirements because the disturbing factors of competition and profit had been eliminated. Yet the board's monopoly was very far from complete. In 1932 there were 157,487 private cars licensed in London and Middlesex alone; in 1938 there were 259,926. The private car congested the streets and impeded the public service vehicle although its efficiency as a passenger carrying agency was markedly less. The bicycle would certainly seem to have increased by 50 per cent. since 1932, though its exact numbers were unknown. The telephone, an economiser in the transport of bodies, the C.O.D. system of the Post Office, the development of the mail order business by the large well known stores, the taxicab, and the car as a private hire vehicle—the latest candidate for public patronage—were other competitors.

The board had a severely qualified monopoly depending upon the comfort and convenience of its public services. The board was not uncontrolled. There were specific controls provided in the Act of 1933. That they had not yet been exercised testified to the reasonableness and good sense both of those in whose hands they were placed and of the board.

At an early stage in its career the board discovered that there were apparent conflicts of interests and confusion of suggestions among the local authorities themselves because they were unable to take a large view of traffic problems. To surmount this obstacle to understanding, the board encouraged the establishment of committees of local authority representatives covering some natural zone or section of traffic movement. Eight such committees were now in active existence. The board would contemplate a series of committees of this sort covering the whole of its area beyond the London County.

After giving some details of its relations with Parliament, Mr. Pick went on to speak of the independence of the board—a topic which provoked some controversy. The board was not answerable to the stockholders. There was no annual meeting. The absence of any regular means of communicating with its stockholders was both an advantage and a disadvantage to the board. To mitigate the disadvantages, the board had presented an annual report of a comprehensive and informative character to the Minister of Transport hoping by that means that its position would be readily appreciated. The independence of the board had been secured by elaborate provisions in the Act of 1933. The appointment of members of the board had been placed in the hands of appointing trustees, who were disinterested representative persons. Members of the board were appointed for not less than three or more than seven years.

Passing then to financial matters, the speaker said that the setting up of a reserve fund, towards which payments could only be made after the full standard rate on the "C" stock had been paid, was envisaged. Provision was made for the interest on the "C" stock to vary between the ultimate standard rate of 5½ per cent. and the maximum permissible rate of 6 per cent. —an obligation which the board had so far not met in full. The return on the "C" stock over the first five years had been, with minor variation, 4 per cent. One annual report suggested that if there had been no mention of an expected 5½ per cent.; this 4 per cent. would have been deemed not unreasonable a return in the circumstances, for if anyone would take the trouble to examine the financial position of other capital metropolitan systems of transport, he would find that not one of them was self-supporting. London Transport was distinguished in being required to be self-supporting. The "A," "TFA," and "LA" stocks, equivalent to debentures, amounted to £62,525,235 or 56 per cent. of the whole; the "B" stock, equivalent to preference stock, to £23,709,830, and the "C" stock to £25,698,802.

The loans from the London Electric Transport Finance Corporation ranked for interest as to one-third *pari passu* with "A" stock, one-third *pari passu* with "B" stock, and one-third *pari passu* with "C" stock, except that if there were a deficiency of revenue required to meet the interest on the third ranking with the "C" stock, this third should rank prior to the

"C" stock. The total sum required to meet the interest on capital was £6,318,000 per annum. If this fell by, say, £250,000—roundly 1 per cent. on the "C" stock—it represented only about 4 per cent. of the total fund required for interest, but it represented at the same time 20 to 25 per cent. of the fund which had so far been available for interest on the "C" stock. Taken back into gross receipts it represented nearly 1 per cent., so that, if there were no compensating factors in operation, a fall of 1 per cent. in gross receipts might result in a fall of more than 1 per cent. in interest on the "C" stock. That was the delicate position in which the board found itself. With those facts in mind there was room for some astonishment that the board had maintained so far a relatively stable position.

Under the Act of 1933 no effective provision was included for stabilising the rate of return on the "C" stock. The board was left with no discretion as to the rate at which it should distribute any surplus of earnings in its possession or as to the way in which such a surplus could be appropriated. It was required to divide up to the hilt to the nearest one-eighth of one per cent. until the standard rate was reached and after that was precisely enjoined what it could do with what remained. There was no sum carried forward from year to year to act as a buffer between fat and lean years and no specific reserve which could be applied in support of a given rate of interest.

The discretion of the board in relation to its annual accounts was almost wholly confined to the appropriation to renewal reserve. It was possible to extend the life of cars and buses and trolleybuses a year or to diminish it a year and so with other parts of the equipment, but any wide range was soon shown to be impracticable. In the initial years of the board a further factor had been dominant, namely, the economies of standardisation of equipment. Provision had been made in these early years for a rapid elimination of diverse and intrusive elements. The board justly claimed to have provided fully for both the wear and tear and obsolescence of its assets in all their aspects. There was provision for the appointment of a receiver and manager, conferring upon what used to be an equity stock the protection that hitherto had been reserved for debenture stocks normally fully covered. A receiver and manager could take risks or make curtailments which the board could not, but would they be in the best interests of the board or the travelling public? Even those most concerned, the holders of the "C" stock, saw the difficulties and cast about for other remedies. The board was able to have only one opinion on what was a fair return upon the "C" stock for it was directed by statute to pay the standard rate of 5½ per cent.

Always the return upon the "C" stock had to be raised to a level which would enable fresh "C" stock to be issued at or close to parity, for the board was required to finance its future capital requirements by issuing "A," "B," and "C" stock in such proportion that not more than one third was "A" stock and not less than one third "C" stock. The board had to be a progressive undertaking. When the present programme of new works was completed, there would be a demand for still further works. But the board could not proceed until its financial position became secure.

The pooling scheme with the main-line railways, though it had its uneasy aspects, ensured a single view of the problem of London's local passenger traffic. It supported a vast programme of capital expenditure not otherwise feasible and led to the linking up of the Underground and suburban railway systems. What the overshadowing receiver and manager would have to do with regard to the pooling scheme was lost in the clouds of law. No one had so far thought that conundrum out. Yet the pool was insufficient to satisfy the requirements of those who were its members. All the development and improvement of its services had not yet attracted sufficient traffic fairly to recompense those who had supplied the capital invested in the undertaking. It could not be alleged that the present basis of charge throughout London was high. On the board's railways the average fare paid was under 3½d., the average distance travelled was about 4½ miles, and the average charge a mile about 0·7d.; 55 per cent. of the passengers carried by the board on all forms of transport paid no more than 1d. The increases proposed would certainly not make the charges burdensome as some alleged. The effective rate of charge for ordinary passengers would not exceed a penny a mile.

It was necessary for some discrimination to be shown in the burden of taxation; the taxes on London Transport now amounted roundly to £2,770,000, a sum which crippled the resources of a public utility, enhanced the price of travel, and militated against the healthy and agreeable distribution of the population. The fortune of the board was the fortune of London. If London enlarged its borders and flourished, then London Transport had to do likewise. The board looked forward to a London of 12,000,000 people disposed in the London Transport Area, not inefficiently and wastefully as now, but according to some plan. The future was vivid with fresh problems, so that the board could never be dull or humdrum.

After Mr. Pick had concluded his address, the meeting was declared open for discussion. Among the speakers was Mr. Sidney E. Garcke, who stressed that geography and transport were linked. He thought that it was impossible to draw a line between town and country.

The Engineering Side of Road Transport

Mr. A. E. C. Dent, Motor Assistant to the Superintendent of Road Transport, G.W.R., gave a lantern lecture to the G.W.R. (London) Lecture & Debating Society under the above title on March 2. Mr. F. C. A. Coventry presided.

The lecturer dealt with the general features of road transport as a whole, and especially in respect to goods operation. The engineer had to carry on his work within the limits of a great many regulations affecting the structure of road vehicles, by which, indeed, his work had been almost revolutionised. There were regulations common to both passenger and goods vehicles such as those for unladen weight, general dimensions, &c., and special ones for passenger vehicles, as for seating capacity, &c. An important and difficult problem was that of unladen weight, since it involved the questions of taxation and speed. Extra taxation was often avoided only by a narrow margin which could be easily destroyed by, for instance, tyre weight not taken into consideration. The engineer had to provide for the operator a vehicle giving the largest payload with the maximum of speed and the minimum of licence charge.

The lecturer reviewed the different sources of power applied to the vehicle. The type of motive unit was intimately connected with the considerations of cost, speed, power and weight. For instance, steam power for road vehicles had diminished by reason of the high proportion of taxable unladen weight. The petrol engine on the other hand had remained popular. The oil engine had developed, but its higher capital cost and standing charges had to be offset by a greater number of miles run per year. Considerations of unladen weight militated also against the extended use of producer gas and compressed coal gas.

Mr. Dent proceeded to explain the details of the performance of a vehicle; the distinction between work and power or performance; the measurement of pull and its converse, braking efficiency; and the power absorbed in braking.

The tyre was the medium both of acceleration and braking, and it also carried the load. It was therefore important to understand the nature of the cover and flexible tube which comprised it. Incorrect treatment of the tyre prevented it from functioning properly, and it was very necessary to observe the correct degree of inflation, correct size, and wheel alignment. Even a slight error in alignment lessened the life of the tyres. The standard of driving was also important in this respect. Both high and low temperatures were used by the engineer and they could easily also be destructive; in general the engineer had both to create and destroy forces.

British Railways and the New York Fair

The people of the United States of America will certainly be " put wise " on a host of interesting facts concerning our railways at the forthcoming World's Fair in New York. Not only will they be able to view the actual Coronation Scot train of the L.M.S.R., on exhibition subsequent to its 3,000 miles tour, but they will have at their disposal the Railway and Travel Information Bureau, which is being provided by the British railways in co-operation with the Travel & Industrial Development Association of Great Britain.

The entrance to this bureau will be flanked on each side by models of four famous British expresses: the Coronation Scot of the L.M.S.R., the Coronation of the L.N.E.R., the Cornish Riviera of the G.W.R., and the electrified Brighton Belle of the Southern Railway, and inside there is to be an illuminated map, measuring 10 ft. by 6 ft., giving the main railway routes in Great Britain and Ireland and the highlights of scenic and historic interest, represented by miniature drawings. Thus, it will be possible for intending visitors to the British Isles to plot their journeys visually, as well as to avail themselves of the practical assistance of experienced travel representatives, sent specially from England for this purpose.

In addition to a frieze of posters, others will be displayed on a special machine which automatically shows a series of illuminated pictures; British railway posters have been sold in their thousands in America during recent years.

A further striking feature consists of a working model of Southampton docks, of which we publish an illustration on page 470. This attractive model is 26 ft. long, and has been constructed in the form of a tank, with the sea represented by actual water on which float 25 scale models of famous liners; by an ingenious system of travelling electro-magnets on tracks beneath the water some of these vessels move to and from their berths at the various quaysides. The entire work (with the exception of the ships) has been executed by Southern Railway model-makers, taking five months to complete; houses, dock-buildings and equipment, locomotives, coaches and wagons totalling nearly 3,000 have been built to a scale of 50 feet to one inch, and the remarkable approximation to reality is a tribute to the skill and craftsmanship of Mr. Charles A. Carter, whose railway models, including, among others, the Bournemouth Belle and the L.M.S.R. *Coronation* locomotive being hoisted on board the *Belmapela*, deserve special mention. There is little doubt that this excellent model will serve to bring the merits of England's premier passenger port and one of its chief merchandise ports to the notice of American traders and industrialists, and also to prospective tourists.

The pictorial map inside the bureau has been designed by Mr. Alfred Taylor, and the constructional work has been executed by the Thorpe studios; the whole of the exhibit has been planned under the direction of the publicity officers of the British railways.

Accelerations in Germany

Further details are now available concerning the through working of the Rheingold Express to and from Milan, which will become effective daily from May 15 next, as announced in THE RAILWAY GAZETTE of November 4, 1938. A through portion of the train, including first and second class cars and a baggage van, will be transferred at Basle (Swiss station), on arrival at 5.7 p.m., to the Swiss 5.30 p.m. train (previously 5.25 p.m.) for Chiasso, giving an arrival in Lucerne at 6.52 p.m., in Lugano at 10.20 p.m., and in Milan at 12.5 a.m., with a direct night connection to Rome. For the return working a new train will be provided from Milan to Lucerne, leaving Milan at 6 a.m., and Lugano at 7.26 a.m.; from Lucerne this will become the 10.45 a.m. train (previously 10.37 a.m.), reaching Basle (S.B.B.) at 12 noon, and leaving as now at 12.18 p.m. A through service will thus be provided between the Hook of Holland and numerous popular Alpine resorts; it will also be possible to travel from London (Liverpool Street) to Milan, leaving at 8.30 p.m. and with a comfortable night's rest on the steamer, in 27 hr. 35 min., and to return in 26 hr. 38 min., leaving Milan at 6 a.m. and reaching Liverpool Street at 8.38 a.m. It has not previously been possible to make this journey without a night in the train in addition to that on the steamer.

There is also to be a new development in Germany which will make it possible for the first time to perform the journey of nearly 720 miles between Berlin and Milan without overnight travel. The network of German high-speed diesel services is to be supplemented by a new train leaving Berlin (Anhalter) at 7.54 a.m., and reaching Basle (Swiss station) at 4.52 p.m., where connection will be made with the southbound Rheingold Express. In the northbound direction the diesel unit will leave Basle (S.B.B.) at 12.10 p.m., in advance of the Rheingold and reach Berlin at 9 p.m., thus reducing the Milan—Berlin journey time to the unprecedented figure of 15 hr. Going south the journey will take 16 hr. 11 min. The time of 8 hr. 58 min. from Berlin to Basle, and 8 hr. 50 min. from Basle to Berlin will also be considerably faster than any previous service. Further, Frankfort will thus be connected with Berlin by high-speed diesel services twice in each direction daily, morning and evening, in an average of about 5 hr. for the 335-mile journey. This will enable the Frankfort business man to travel to the capital, have 5 hr. 23 min. there, and return home between leaving at 8.12 a.m. and arriving back at 11.40 p.m., by the existing service, or, alternatively, for the Berlin traveller to leave at 7.54 a.m. and be back in Berlin by 9 p.m. with 3 hr. in Frankfort.

Certain other substantial improvements in the through train services affecting Germany are forecast, and particularly those serving Vienna. The existing night service from Paris to Vienna *via* Nancy, Stuttgart, Munich, and Salzburg will leave Paris at 10.25 p.m. instead of 10 p.m., but will reach Vienna in winter at 8.35 instead of 10.18 p.m. the next evening, and in summer at 7.35 instead of 9.28 p.m.—a total gain of no less than 2 hr. 18 min. in summer and 2 hr. 8 min. in winter. The return service will leave Vienna at 8.50 instead of 8.12 a.m., and reach Paris at 6.55 instead of 7.15 a.m. the next morning, an acceleration of 58 min. The night service from Basle to Vienna, hitherto held for 30 min. at Innsbruck, will have this stop cut to 10 min., leave Innsbruck at 4.55 instead of 5.15 a.m., and be accelerated to reach Vienna at 2 instead of 2.45 p.m. It will run from Salzburg independently of the 7.45 a.m. from Munich, to which it has previously been attached.

MANCHESTER (L.M.S.R.) BOXING TOURNAMENT.—The Manchester Goods District (L.M.S.R.) fourth annual amateur boxing tournament was held at the King's Hall, Belle Vue, Manchester, on March 11, in aid of the funds of the Railway Servants' Orphanage. The hall, which is capable of holding over 6,000, was filled to capacity with an enthusiastic audience, which included a large number of influential members of the Manchester and district trading community. There was keen competition in the contests to secure the silver challenge cup presented by Mr. H. G. Humphreys, District Goods Manager, L.M.S.R., Manchester, and the teams representing the Manchester goods stations were very evenly matched; the winning team was Ancoats. The tournament was inaugurated by Mr. Humphreys in 1936 with the object of raising funds for the Railway Servants' Orphanage, and has, since its inception, been most successful, for as a result of the 1936, 1937, and 1938 contests, sums amounting in all to £812 were handed over to the orphanage, and it is confidently expected that with the proceeds from the present contests the aggregate total will have reached a figure of well over £1,000.

XUM

QUESTIONS IN PARLIAMENT

Railways and Defence

Dr. Leslie Burgin (Minister of Transport) winding up a two-day debate, on March 2, on a number of supplementary estimates for air-raid precautionary services, national service, and the Lord Privy Seal's Department, said he wanted to give some idea of the steps that had been taken to keep the iron backbone of the country available for the tremendous strain to which it would be subjected immediately there was an outbreak of war

An hon. member: Give them a square deal.

Dr. Burgin said it was not the time to talk about a square deal. He hoped the interests of railways, roads, and traders would all have the good sense to reach some agreement of a kind which he could implement by legislation and bring to the House at an early date. He was very glad to know that progress had been made so far. He hoped that the Transport Advisory Council would send him its report on the draft agreement before it, and that he might be able to come to the House with something in the nature of an agreed Bill. He wanted the House to realise that the railways not doing too well were faced, in connection with a national emergency, with the obligation to spend millions of pounds to protect what was recognised by every member of the House as an essential part of the defence of the country. He had been conducting negotiations with them with a view, first of all, to arranging for the work to be put in hand and arguing how it was to be paid for afterwards. The work had been put in hand. A tremendous amount of work had been done in connection with a pool of breakdown trains, in connection with the provision of a vast deposit of spares of one kind and another in case vulnerable places were touched. That had been done. The railways had set up a committee. The committee worked with his officials, and the closest liaison occurred. He was very well satisfied with the work that was being done with the railways, including, of course, the London Passenger Transport Board, with which similar arrangements had been made.

Transport of Building Materials

Sir Joseph Lamb (Stone—C.), on March 2, asked the Secretary of State for Air, whether he was aware that road haulage contractors had been informed by merchants supplying materials for air defence buildings that the contracts of the Air Ministry required such materials to be conveyed by railway; and whether he confirmed that this condition was contained in the contracts made by his department.

Captain H. Balfour (Under-Secretary of State for Air): There is no condition in the contracts made by my department requiring stores or materials to be carried by rail.

Captain W. F. Strickland (Coventry—C.), on March 2, asked the Secretary of State for Air whether all manufacturers and contractors selling goods to the Air Ministry for aerodromes and other buildings were required to accept a condition requiring the goods to be conveyed by railway; and why the Air Ministry, in making its purchases, attempted to discriminate in favour of railways against other forms of transport.

Captain Balfour: There is no condition in the contracts made by my department requiring goods to be carried by railway.

Air-Raid Precautions

Mr. V. La. T. McEntee (Walthamstow West—Lab.), on March 2, asked the Lord Privy Seal, whether speaker-equipment would be installed at railway stations and such other places as were necessary to facilitate the evacuation of children and others in war time.

Sir John Anderson (Lord Privy Seal): The hon. member may rest assured that in the event of an emergency all necessary arrangements would be made at the entraining stations and other places to facilitate the movement of children and other persons to be evacuated from vulnerable areas.

Railway Companies' Staffs

Major-General Sir Alfred Knox (Wycombe—C.), on March 7, asked the, Secretary of State for War if he was aware that junior officers of the Territorial Army who were members of the staff of railway companies lost their salary when attending annual training or courses of instruction; and if he would see his way to represent to the leading railway companies that they should make some concession in the interests of national defence.

Mr. L. Hore-Belisha (Secretary of State for War): I regret that the railway companies have not seen their way to grant the same facilities as are given by other large industrial undertakings. My right hon. friend the Minister of Transport has agreed to look into the matter.

Liabilities of Railway Companies

Mr. H. Day (Southwark Central—Lab.), on March 8, asked the Minister of Transport whether, in view of the many representations which had been forwarded to him by persons using British railways who were assumed to have entered into a contract under which they had no legal right to claim against the railway companies for compensation for loss, damage, injury or delay, whatever the reasons, he would consider introducing legislation that would prevent the railway companies from contracting out of their liabilities to the general travelling public in this way.

Dr. Leslie Burgin (Minister of Transport): No such representations have reached me recently. I see no need for legislation. I am satisfied with the undertakings given by the main-line railway companies which were communicated by me to the House in answer to questions as long ago as April 13, 1938.

Mr. Day: Will the Minister further communicate with the four main-line railway companies and have this matter made clear?

Mr. C. C. Poole (Lichfield—Lab.): Is it not a fact that the four main-line railway companies have already met compensation claims for loss, damage, injury, and delay.

Dr. Burgin: I am quite satisfied with the undertakings given.

Anglo-Argentine Railways

Lieut.-Colonel A. V. G. Dower (Penrith and Cockermouth—C.), on March 8, asked the President of the Board of Trade whether, in order to strengthen our agricultural policy, he would make 1½d. a lb. the irreducible minimum of the import duty on Argentine meat when negotiating an extension of the trade agreement, in view of the local ill-treatment of the Anglo-Argentine railways for the benefit of the Argentine pastoral and agricultural industries.

Mr. Ronald Cross (Parliamentary Secretary to the Board of Trade): My right hon. friend is not sure that my hon. and gallant friend's suggestion would have the effect he appears to desire, but he will bear the general lines of the suggestion in mind.

Railway Services Between Hong Kong and Canton

Sir Douglas Thomson (Aberdeen South—C.), on March 8, asked the Prime Minister whether he had any information regarding the prospects of a resumption of railway or steamer services between Hong Kong and Canton.

Mr. R. A. Butler (Under-Secretary of State for Foreign Affairs): On the question of steamer services I would refer my hon. friend to my reply to the hon. member for Bethnal Green on March 6. My noble friend is not in a position to say when a resumption of the railway service may be expected, but the matter is under discussion between His Majesty's Consul-General at Canton and his Japanese colleague.

Transport Advisory Council Report

Mr. T. Kennedy (Kirkcaldy—Lab.), on March 15, asked the Minister of Transport if he had yet received and considered the report of the Transport Advisory Council upon the appeal of the railway companies to be freed from legal requirements attached to the rates on merchandise traffic, in view of the competition of coastwise shipping and road transport; and what action the Government proposed to take regarding the appeal He also asked the Minister if he had any recent information regarding a proposed agreement between the railway companies, coastwise shipping interests, and road-transport interests aimed at an abandonment of competition between the interests mentioned in the matter of transport rates for the carriage of merchandise traffic; and if any parlia-

mentary action would be taken for the protection of the public interests concerned.

Dr. Burgin : I have not yet received the report of the Transport Advisory Council on this matter. I understand that agreements between the railway companies and certain other interests have been reported to the council and are being taken into consideration by them in framing their recommendations. My remit to the council specifically asks for advice as to what, if any, safeguards may be desirable for the protection of other interests.

Mr. Kennedy : When does the Minister expect to receive the report ?

Dr. Burgin : I hope it will be in my hands very shortly, but I have not been given any particular date.

Staff and Labour Matters

Building Industry Supplementary Unemployment Insurance Scheme

The inquiry into the draft scheme entitled " The Building Industry Supplementary Unemployment Insurance Scheme," was opened at the Ministry of Labour on March 8. Mr. Lascelles, in opening the inquiry, said that he wanted to get all the necessary information in the way most convenient to all concerned, and he suggested that the promoters of the scheme, the National Joint Council, should appear first to set out the case for the scheme, and, if they wished to do so, to call witnesses in support of their case. It would then be open to objectors to put questions to the witnesses called by the National Joint Council, or to representatives of the National Joint Council. Next, he would call on any organisation or person, apart from the National Joint Council, who might wish to make representations in support of the scheme. Finally, the objectors to the scheme would give their evidence.

The principal objections which have already been submitted are :—

That certain classes of workers lose comparatively little time for bad weather, and it is unfair that they and their employers should pay for the time lost by other workers (those objections include painters, plumbers, woodworkers, electricity supply workers);

That certain workers are employed in factories or under cover and are not affected by weather (*e.g.*, joinery factories, precast concrete);

That in certain undertakings workers are paid at full rates notwithstanding weather (e.g., Air Ministry, I.C.I., etc.);

That apprentices have been included in the scheme;

That some groups of employers and workers already have agreements covering inclement weather which have been in operation for some considerable time and work quite satisfactorily;

That workers engaged on maintenance of building incidental to other industries should be excluded (*e.g.*, L.P.T.B., Aire & Calder Navigation, I.C.I., railway companies, textile trade);

That industries included in the scheme were not represented on or consulted by the National Joint Council (*e.g.*, heating and domestic engineers);

That the ballot of the trade unions was not properly conducted.

The National Joint Council will develop its case for the scheme on March 29, and the objections will be heard on March 30 and April 12 and 13.

Road Haulage Wages Board

The Road Haulage Central Wages Board, at its first meeting in London on March 9, decided that, in the first instance, the eleven area boards should be invited to report to the central board as to the wages, hours, and other conditions of labour which, in their view, should operate within their respective areas. These reports will be considered by the Central Board at its next meeting on May 3.

Royal Commission on Workmen's Compensation

The Royal Commission which was appointed in December last has now begun to take evidence on the matters falling within its Terms of Reference which are " to inquire into and report on the operation and effects of the system of workmen's compensation for injuries due to employment and the working and scope of the law relating thereto, and the relation of this system to other statutory systems for providing benefits or assistance to incapacitated or unemployed workmen and to arrangements for the treatment of injured workmen and the restoration of their working capacity, and to make such recommendations, whether by way of amendment of the Workmen's Compensation Acts or otherwise, as may appear desirable; and, further, to consider in relation to workmen's compensation and advise whether any alteration is desirable in the present position in regard to the civil liability of the employer to pay compensation or damages in respect of such injuries independently of those Acts."

The Chairman of the commission is Sir Hector J. W. Hetherington. The commission held its first public sitting at the Ministry of Labour on February 23, when it began to take evidence submitted on behalf of the Home Office.

Forthcoming Meetings

March 22 (*Wed.*).—**East Kent Light Railways Company** (AnnualGeneral), Waterloo Station, S.E.1, at 12.30 p.m.

March 29 (*Wed.*).—**Grand Union Canal Company** (Ordinary General), Winchester House, Old Broad Street, E.C., at 11 a.m.

Railway and Other Reports

Canadian Pacific Railway Company.—The accounts for the year ended December 31, 1938, show the following results, with comparative figures for 1937 in parentheses : Gross earnings, $142,258,981 ($145,085,558) ; working expenses, including taxes, $121,506,515 ($121,343,311) ; net earnings, $20,752,466 ($23,742,247) ; other income, $7,363,673 ($11,629,711) ; available for fixed charges, $28,116,139 ($35,371,958). Fixed charges amounted to $24,767,939 ($24,041,534), and payment under " Soo " bond gaurantee to $2,085,818 ($1,868,140), leaving a balance to profit and loss of $1,262,382 ($9,462,284). Adding $137,205,650 ($137,160,134) brought forward, makes a total of $138,468,032 ($146,622,418). From the total of $138,468,032 has to be deducted loss on lines abandoned, &c., $1,498,382, leaving $136,969,650 to be carried forward. As already announced, no dividend will be paid for 1938 on the preference stock. Particulars of " other income " include—dividends, $4,867,206 ; net income from interest, separately operated properties, etc., $1,492,531 ; net earnings from steamships, $591,071, after providing $3,781,990 for depreciation ; and net earnings from hotels, etc., $412,865, after providing $1,246,687 for depreciation of hotels.

Paris-Orleans Railway Company.—The dividends for the year 1938 are fr. 64 a share on the ordinary shares and fr. 49 a share on *jouissance* shares, in both cases the same as for the previous year.

United Steel Companies Limited.—An interim dividend of 2½ per cent., less tax, on account of the year ending June 30, 1939, will be payable on March 30. This interim compares with 3 per cent., less tax, for 1937-38, but is payable on a larger capital.

State of Bahia South Western Railway Co. Ltd.—The company announces that payment of coupon No. 48, due March 1, 1939, on the 6 per cent. first mortgage bonds is deferred, and interest represented by such coupon will therefore become payable out of the company's net profits in respect of subsequent financial years.

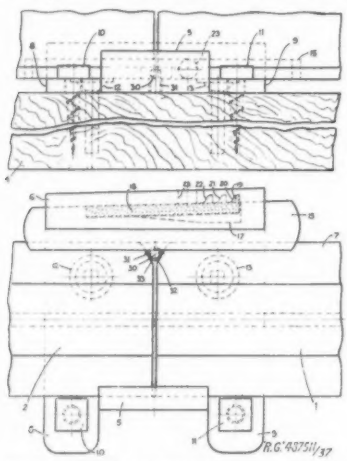
Vickers Limited.—At a meeting of the board of Vickers Limited held on March 8, it was decided to recommend for approval at the annual general meeting, to be held on April 3, a final dividend on the ordinary stock of 6 per cent. actual, less income tax at 5s. 6d. in the £, making 10 per cent. for the year ended December 31, 1938. Subject to such approval, payment will be made on April 4. Net profit for the year is £1,398,853, against £1,351,056 in 1937. The profit for each year includes interest on the debenture stock and a dividend on the share capital of the Metropolitan-Cammell Carriage & Wagon Co. Ltd.

ABSTRACTS OF RECENT PATENTS*

No. 487,511. Railway Permanent Way

J. C. Toy-Midgley, of L.4.A. Charbagh, Lucknow, United Provinces, India.—(Application date : January 19, 1937.)

A rail chair is formed with integral jaws 5, 6, the jaw 5 being turned up out of the base leaving two lugs, 8, 9 through which fixing bolts 10, 11 are passed into the sleeper. Other bolts 12, 13 are arranged in countersunk holes in the chair base under the rail. A key 15 is driven between the jaw 6 and the rail flange and is formed with a recess 17 in which is mounted a spring bar 18 formed at the end with a jib 19 adapted to enter one of a series of recesses 20-22 in the jaw 6 to prevent movement of the key. The key may be released by

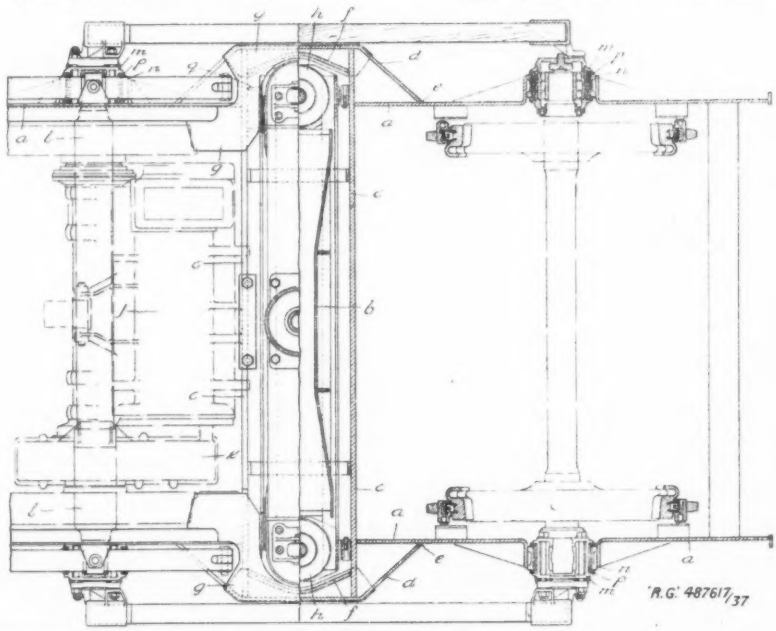


a screw bolt adapted to enter a hole 23 in the jaw 6 and mounted in a clamp attachable to the rail head. Rail warp is prevented by a pin 30 fitting a hole 31 in the base and engaging bevelled portions 32, 33 of abutting rail ends. In another form, the chair is formed integral with the sleeper by turning up two tongues 6 at one side of the rail and one 5 at the other side. In another form, the chairs are formed integral with pot sleepers, which are connected by a T-shaped tie-bar engaging T-shaped slots in the sleepers. A hole is formed in the top of the sleeper under the rail base to receive a block formed on the underside with a series of ribs adapted to engage similar ribs on the portion of the tie-bar under the hole, thus locking the tie-bar in position. The block is reversible end for end in the hole and terminates at one end in a half rib, enabling an adjustment of the tie-bar to the degree of half the width of a rib to be made. In laying the track the sleepers are arranged so that the ribs 5 engage the outer edge of one rail and the inner edge of the other rail, and the keys 15 are placed alternately on the outer edges of the two rails to facilitate replacement of sleepers.—*(Accepted June 22, 1938.)*

No. 487,617. Railway Vehicle Undercarriage

W. S. Graff-Baker, of 4, Edwardes Square, Kensington, London, W., and London Passenger Transport Board, of 55, Broadway, Westminster, London, S.W.1. (Application date: February 26, 1937.)

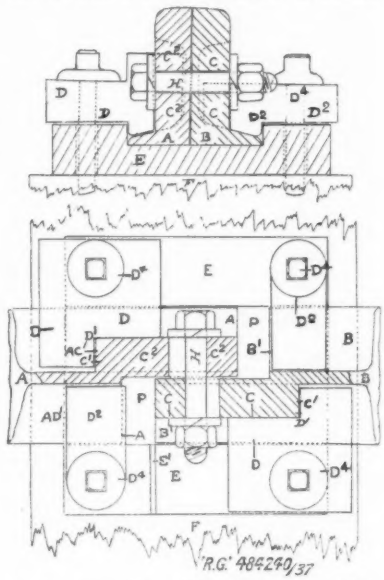
In order to provide for a bogie bolster having a width greater than, or at least equal to, the normal width between the solebars *a*, the latter are cranked outwardly adjacent to the ends of the bolster *b*, the construction involving, as shown, the insertion of a pair of transoms *c*, which interrupt the continuity of the solebars *a* and project laterally beyond the same, and the fitting over the ends of the transoms *c* of a bent plate *d* which is welded to the solebars at *e*. Additional plates *f*, *g*, are welded in position to form a box-like structure receiving beam are disposed in or slightly outside the plane of the solebars *a*. In the case of a self-propelled vehicle, the driving thrust from the motor *j* is transmitted from the bogie to the bolster by way of channel-section elements *q* between which and the bolster are arranged bearing-plates in direct alignment with the solebars *a*. —*(Accepted June 23, 1938.)*



No. 484,240. Railway Rail Joints

Herbert Francis Hayllar, of "Eventide Home," 20, Garford Street, Poplar, London, E.14.—(Application date : January 29, 1937.)

In a rail joint a block *c* of metal is welded to one side of the web of one rail *B*, and a similar block c^2 is welded



to the opposite side of the web of the other rail *A*. Clamp plates *D* secured to the sole plate *E* and sleeper by screws D^4 engage the outer faces of the blocks *c*, c^2 and the upper faces of the rail flanges, and have elbows D^1 engaging the ends c^1 of the blocks, so that each rail is prevented from creeping away from the other. The other flanges are secured to the sleeper by clamps D^2. The sides of the rails not provided with the blocks are cut

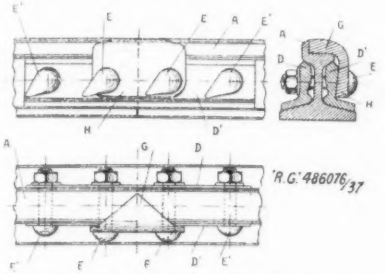
* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. Group abridgments can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, either sheet by sheet as issued, on payment of a subscription of 5s. a group volume, or in bound volumes, price 2s. each, and the full specifications can be obtained from the same address price 1s. each

away to form a lap joint as shown.—(*Accepted May* 3, 1938.)

No. 486,076. Railway Rail Joint

A. Lodetti, of 8, *Via Montesuello, Milan, Italy, B. Negrini, of* 8, *Via Frino, Bologna, Italy, and A. Sbarberi, of* 24, *Via Farini, Bologna, Italy.*—(*Convention dates*: *December* 1, 1936, *and June* 30, 1937.)

A railway joint is formed by cutting out from the rail heads angularly shaped portions from the outer edges towards but not reaching the inner edges, and of a depth less than the depth of the head, so that when two rails abut, a wedge-shaped recess is

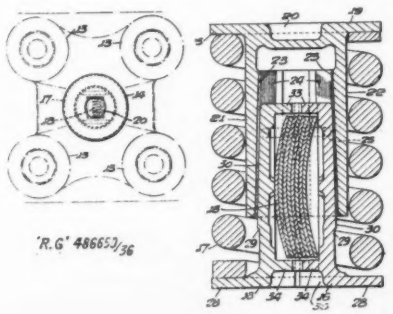


formed, adapted to be filled by a correspondingly shaped member *G* having a depending portion *H* which is secured to the outer fishplate D^1 by the two middle fishbolts *E*. The abutting faces of the fishplates D^1 and flange *H*, may be slightly inclined to the vertical as shown, so that when the bolts are tightened the part *G* is drawn down into its recess. In another form the recess is inclined downwards towards the apex, and the part *G* is similarly shaped. The bolt holes in the flange *H* may be larger than the bolt stems and may be rectangular, oval, or round.—(*Accepted May* 30, 1938.)

No. 486,650. Railway Vehicle Undercarriages

The Symington-Gould Corporation, of 20, *Symington Place, Rochester, New York, United States of America, Assignees of D. S. Barrows and E. H. Blattner, both of Box* 993, *Rochester, New York, United States of America,*—(*Convention date*: *November* 30, 1936.)

A combined spring-supporting and vibration-damping unit for use in association with a railway vehicle bolster comprises a tubular sleeve 22 engaged internally by a pair of slidable friction shoes 29; a main external

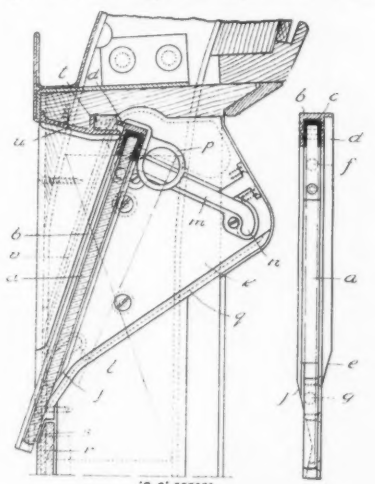


supporting helical or like spring 17 disposed between flanges 15, 28 on the sleeve and shoes respectively; and additional springs 18 acting directly upon the shoes and maintaining them in frictional contact with the interior of the sleeve 22. Preferably the spring 18 is a laminated one extending in the usual direction of the shoes, while the contacting surfaces 23, 30 of the sleeve and shoes are made convergent so as to increase the pressure therebetween as the shoes move into the sleeve owing to an increase in load. The shoes are normally separated by a small gap and have transverse webs or flanges 33, 34 for positioning the springs 18. The upper and lower surfaces of the flanges 19, 28 may be either plane as shown, or they may be convexed for permitting the unit a slight rocking movement when the bolster is displaced relatively to the truck frame. Each unit is preferably associated in a group with a number of helical springs 13.—(*Accepted June* 8, 1938.)

No. 487,438. Ventilators for Railway Vehicles

W. S. Graff-Baker, of 4, *Edwardes Square, Kensington, London, W., and London Passenger Transport Board, of* 55, *Broadway, Westminster, London, S.W.*1. (*Application date*: *February* 26, 1937.)

A ventilator for railway coaches consists of a swinging glass light *a* arranged above a fixed light *r* and overhanging by its lower edge the top of the fixed

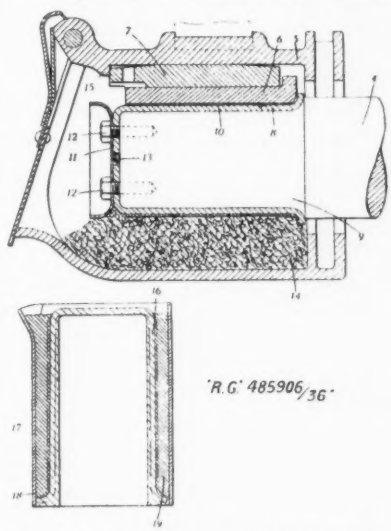


light. The light *a* is mounted in a packing strip in a metal frame *b* which has a projecting flange *d* cut away at *e* and is provided with pegs *f*, *g*, the lower part of the rear face of each frame member being cut away at *j* to accommodate a water channel *q* on each side plate *k*. A lower slot *l*, and an upper groove *m* are formed in the side plates to take the pegs *g*, *f*, the pegs *f* each falling into dropped portions *n* at the end of the groove. A handle *p* is provided for operating the ventilator. The upper edge of the fixed light *r* is bevelled at *s* so that when the swinging light *a* is closed, its lower end is flush with the light *r*, its top contacting by the flange *d* with a packing strip *t*, and its sides engaging with a channel groove *v* on the front edges of the plate *k*.—(Accepted June 21, 1938.)

No. 485,906. Bearings for Axle Journals

General Motor Corporation, of Grand Boulevard, City of Detroit, State of Michigan, United States of America. (*Convention date*: *November* 30, 1936.)

The journal 9 of a railway vehicle



axle 4 has secured to it a tubular steel sleeve 8 which has a layer of bronze bearing metal 10 fused to its outer cylindrical surface. The bearing metal 10 contacts a bearing block 6 of preferably hardened steel. The journal liner is made by fixing a sleeve 17 to a tubular steel sleeve 16. Molten bearing metal is then poured into the annular space 19 and the whole is rapidly chilled from the interior. Finally the article is machined as shown by the dotted lines to form the finished liner.—(*Accepted May* 26, 1938.)

COMPLETE SPECIFICATIONS ACCEPTED

482,251. Vereinigte Eisenbahn-Signalwerke Ges. "Railway train control systems."

482,574. Mills, Limited, J., executors of, and Macbeth, A. Metal keys for securing railway rails in their supporting-chairs.

482,589. Freins Jourdain Monneret. Device for counteracting the effects of electrical forces induced in railway systems by electromagnetic brakes.

482,477. Shave, A. E., and London Passenger Transport Board. Spring operated crossings, points, and the like for railways and the like.

482,433. Killeen, M. J. Coupling of railway or like vehicles.

483,154. Phillips, N., and Clow, A. C. Securing of rail-chairs to sleepers.

483,933. Young, H., and Harland & Wolff Ltd. Manufacture of collector shoes for electric rail traction.

NOTES AND NEWS

Czech Locomotive Drivers for Iran.—The Czecho-Slovak State Railways have granted two years' leave without pay to 41 locomotive drivers, to enable them to proceed to Iran, where they will be employed for that period on the Trans-Iranian Railway.

P.L.A. Staff Arts and Crafts Exhibition.—This exhibition will be opened by Sir Ralph Wedgwood, C.B., C.M.G., on Tuesday, March 21. The exhibition will be held at the head offices of the Port of London Authority, Trinity Square, E.C.3, and will be open to the public at the following hours :—March 22-24, from 12 noon to 6.30 p.m. ; March 25, from 12 noon to 4.30 p.m.

Serious French Railway Accident.—The 8.15 p.m. Paris-Toulouse *rapide* collided near Chateauroux shortly before midnight on Monday, March 13, with a goods truck in a train travelling in the opposite direction which had become derailed by a cow straying on the line. The electric locomotive of the express and several of the leading coaches were derailed and the latter badly damaged, with the result that 18 persons are reported to have lost their lives and some 30 to have been injured.

L.M.S.R. Dock Improvements.—Part reconstruction of the south end corner of the quay at Fleetwood, renewal of two pairs of lock gates, and new reinforced concrete slipway are improvements being carried out to meet the growing needs of the port. At Barrow (Buccleuch dock) a steel sheet pile quay is being constructed, the gates of Ramsden dock are being renewed, while the construction of concrete dolphins, reinforced concrete runway and footway is taking place in the harbour yard. The cost of these works is estimated at £124,000.

G.W.R. (London) Operatic Society.—On five days of last week the G.W.R. (London) Operatic Society presented the famous musical comedy "A Country Girl." On Tuesday and Wednesday (March 7 and 8) the performances were at the Park Theatre, Hanwell, and on Thursday to Saturday (March 9, 10, and 11) at the New Scala Theatre. Lionel Monckton's tuneful music loses nothing with the passing of years, and James T. Tanner's book in the hands of this excellent company proved as capable of allowing for the insertion of topical allusions as it did in the original production by George Edwardes in 1902. Ronald Ratcliffe's work as "Barry" was outstanding, but indeed all the principals gave capable renderings. Peggy Hughes was "Marjorie Joy" ; Vera Busby the "Princess Mehelaneh of Bhong" ; Geraldine Fisher "Mrs. Quinton Raikes" ; Joyce Hewitt "Nan" ; Cyril Prestage "Geoffrey Challoner" ; Stephen Sweeney the "Rajah of Bhong" ; and—last but by no means least—Jack Sealey "Sir Joseph Verity." The entire production was in the hands of Mr. Frederick G. Lloyd, and Mr. Stanley Cheffins was Honorary Musical Director and Conductor.

Belgian Tourist Vouchers.—From March 15 the special vouchers for tourists can be used by all visitors to Belgium for a minimum period of 3 days and a maximum of 30 days. These vouchers entitle tourists to numerous advantages, including reductions of railway fares, petrol, entrance charges to museums and other places of interest in Belgium. These vouchers are on sale at the chief travel agencies, the booking offices for foreign railways, touring and automobile clubs, and other similar associations.

Twenty More "Coronation" Engines for L.M.S.R.—Twenty additional streamlined express passenger locomotives of the type which is accompanying the Coronation Scot train on its exhibition tour of the U.S.A. are to be constructed by the L.M.S.R. under its 1939 renewal programme. This programme comprises 90 new locomotives and 271 locomotive boilers, all of which will be constructed in the L.M.S.R. workshops. Apart from the streamlined "Princess Coronation" engines, there will be 35 mixed traffic tender engines, 15 heavy freight tender engines, and 20 passenger tank engines of the type used for fast suburban services. All these new engines are of standard designs.

"Square Deal" Publicity.—The novel exhibition entitled "Fighting for Freedom," which explains graphically the vital necessity of the railways to the nation and the reason for their present struggle to secure equality with other forms of transport, attracted over 42,000 visitors during the few days it was open at Waterloo station. It was moved to Victoria station yesterday, and will be open there until March 29. An interesting brochure "Ride With Me on 'The Early Bird'" illustrating a night's work with a goods train has now been published, while a more serious booklet entitled "The Railway Crisis—The Problem and Its Solution," is being circulated by the Railway Companies' Association ; both of these are noticed in our "Publications Received" columns this week.

Progress of Brussels Nord-Midi Junction Railway.—Work is proceeding on the section of the Nord-Midi junction line in Brussels comprising the underground Halte Centrale station, and good progress has been made with the construction of that station itself. In the south of the section, the sheet-steel piling supporting the sides of the cut-and-cover excavation is in position for 400 m. on the eastern side and 171 m. on the west. By February 1 the steelwork framing that will support the reinforced concrete of the completed tunnel had reached 3,000 tonnes. Tenders are now being received for construction of the viaduct section between the Rue de Brabant and the Rue Linnée. A map and a description of the works were published in our issue of December 10, 1937.

Model Railway Sale.—A sale of model railway equipment of all gauges by Bassett-Lowke Limited, on the occasion of stocktaking, is to be held throughout the whole month of April at the firm's London and Manchester branches, as well as at its headquarters in Northampton. Bassett-Lowke's stand at the Model Railway Exhibition at the Central Hall, Westminster, which is to be held from April 11 until the end of the week, will also be the scene of a stocktaking sale.

G.W.R. Ambulance Trophy for Women Employees.—In order to stimulate the first aid movement among women employed by the Great Western Railway, the "Mabel A. Potter" challenge cup has recently been presented for competition among women's teams by Mr. F. R. Potter, Superintendent of the Line, on behalf of his wife. There

The "Mabel A. Potter" challenge cup

is already available the "Florence M. Lean" trophy for the premier ladies' team on the railway, and the new cup will be awarded to the runners-up in the annual competition organised for women employees. The 1939 contest will take place in the General Meeting Room at Paddington on March 29, when Mrs. Potter will present her trophy.

G.W.R. Ambulance Dinner at Gloucester.—Mr. S. G. Hearn, Divisional Superintendent, presided at the annual dinner in connection with the Gloucester G.W.R. ambulance movement held at the Connaught Rooms, Gloucester, on March 11 ; among others

present were the City Member, Mr. H. Leslie Boyce; the Mayor, Mr. Trevor Wellington; the Sheriff, Colonel J. H. Collett; the Town Clerk, Mr. L. O. Need; and Dr. J. F. H. Stallman. Members of the Great Western Railway staff past and present included Mr. L. J. A. Callaway, District Goods Manager, Mr. H. S. B. Whitley, Divisional Engineer, Mr. H. R. Campfield, late Divisional Superintendent, Paddington, and Mr. S. Morris, late Divisional Superintendent, Gloucester. The Chairman remarked that the occasion was a special one, as the G.W.R. ambulance corps had just celebrated its jubilee. During its fifty years of existence its members had gained no fewer than 2,700 awards in addition to a vast number of competition successes by teams and individuals. Mr. Leslie Boyce proposed the toast of the evening and referred to the importance of the movement to the city and the number of men who had come forward for A.R.P. instruction. Examination awards were distributed by the Mayor, who congratulated the class on its continued success.

Southern Railway Traffic Dinner.—The ninth annual dinner of the Southern Railway Traffic Manager's Department was held in London on March 6. Mr. E. J. Missenden, Traffic Manager, presided, and was supported by Messrs. R. M. T. Richards, H. E. O. Wheeler, W. J. England, W. M. Perts, and R. H. Hacker; also among those present were the Paris, Cologne, and Brussels Agents, and several retired members of the Traffic Department. In the course of his speech in response to the toast of the Southern Railway (proposed by Mr. H. O'Neill), Mr. Missenden expressed his high appreciation of the excellent work performed during 1938 by the Operating, Commercial, and Continental branches of his department, notwithstanding the exceptional and heavy work involved by the crises which occurred last year. Mr. Missenden also briefly referred to the many directions in which success had been achieved during the past year, and outlined various further improvements which the company contemplates bringing into effect in the near future.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 10th Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,831¼ mls.)						
Passenger-train traffic...	388,000	394,000	– 6,000	3,813,000	2,899,000	– 86,000
Merchandise, &c. ...	472,000	502,000	– 30,000	4,299,000	4,834,000	– 535,000
Coal and coke ...	288,000	296,000	– 8,000	3,044,000	3,110,000	– 66,000
Goods-train traffic ...	760,000	798,000	– 38,000	7,343,000	7,944,000	– 601,000
Total receipts	1,148,000	1,192,000	– 44,000	11,156,000	11,843,000	– 687,000
L.N.E.R. (6,320 mls.)						
Passenger-train traffic...	260,000	266,000	– 6,000	2,538,000	2,591,000	– 53,000
Merchandise, &c. ...	336,000	357,000	– 21,000	2,991,000	3,426,000	– 435,000
Coal and coke ...	271,000	272,000	– 1,000	2,661,000	2,820,000	– 159,000
Goods-train traffic ...	607,000	629,000	– 22,000	5,652,000	6,246,000	– 594,000
Total receipts	867,000	895,000	– 28,000	8,190,000	8,837,000	– 647,000
G.W.R. (3,737¾ mls.)						
Passenger-train traffic...	168,000	169,000	– 1,000	1,619,000	1,634,000	– 15,000
Merchandise, &c. ...	202,000	202,000	—	1,837,000	1,978,000	– 141,000
Coal and coke ...	115,000	121,000	– 6,000	1,164,000	1,287,000	– 123,000
Goods-train traffic ...	317,000	323,000	– 6,000	3,001,000	3,265,000	– 264,000
Total receipts	485,000	492,000	– 7,000	4,620,000	4,899,000	– 279,000
S.R. (2,140 mls.)						
Passenger-train traffic...	260,000	261,000	– 1,000	2,596,000	2,602,000	– 6,000
Merchandise, &c. ...	60,000	62,500	– 2,500	552,000	592,000	– 40,000
Coal and coke ...	33,000	36,500	– 3,500	370,000	383,000	– 13,000
Goods-train traffic ...	93,000	99,000	– 6,000	922,000	975,000	– 53,000
Total receipts	353,000	360,000	– 7,000	3,518,000	3,577,000	– 59,000
Liverpool Overhead ... (6½ mls.)	1,218	1,331	– 113	13,268	13,524	– 256
Mersey (4½ mls.) ...	4,306	4,258	+ 48	44,669	43,654	+ 1,015
*London Passenger Transport Board ...	566,900	568,100	– 1,200	20,966,100	20,761,600	+ 204,500
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,609	1,639	– 30	16,593	16,518	+ 75
,, ,, goods	464	471	– 7	4,265	4,361	– 96
,, ,, total	2,073	2,110	– 37	20,858	20,879	– 21
Great Northern pass. (543 mls.)	9,100	7,300	+ 1,800	80,550	79,300	+ 1,250
,, ,, goods	10,500	9,350	+ 1,150	94,200	84,550	+ 9,650
,, ,, total	19,600	16,650	+ 2,950	174,750	163,850	+ 10,900
Great Southern pass. (2,076 mls.)	27,409	26,940	+ 469	274,279	277,508	– 3,229
,, ,, goods	42,422	40,330	+ 2,092	404,754	413,304	– 8,550
,, ,, total	69,831	67,270	+ 2,561	679,033	690,812	– 11,779

* 37th week (before pooling)

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices Mar. 15, 1939	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	65¼	25¾	29½	—
5% Con. Prefce....	118¾	74	84	—
5% Red.Pref.(1950)	111¾	90	94	+3
4% Deb.	111	97½	99½	—
4½% Deb.... ...	112 5/16	100½	101	—
4½% Deb.... ...	118½	104	106	—
5% Deb.	131½	119	115½	—
2½% Deb.... ...	69¾	60	61½	—
5% Rt. Charge ...	129	114	110½	+½
5% Cons. Guar. ...	128½	103	105	—
L.M.S.R.				
Ord.	30½	11	14	+¼
4% Prefce. (1923)	70¼	23	36½	+2
4% Prefce. ...	82¼	43¾	56½	+1½
5% Red.Pref.(1955)	103½	66	76½	—
4% Deb.	105 15/16	85	94	+½
5% Red.Deb.(1952)	114¼	105	107½	+1
4% Guar. ...	102¾	77½	86½	+1
L.N.E.R.				
5% Pref. Ord. ...	8 9/16	3½	5	—
Def. Ord.	4 7/16	2 1/16	2⅞	—
4% First Prefce.	68¼	21	32	+2
4% Second Prefce.	27¼	8	13	+½
5% Red.Pref.(1955)	97	40¼	49½	+2
4% First Guar. ...	97½	66¼	74½	+3
4% Second Guar.	91¼	52	63½	+3
3% Deb.	79¼	60	67½	+1
4% Deb.	104⅛	77	87½	+1
5% Red.Deb.(1947)	110⅝	97	105½	—
4½% Sinking Fund Red. Deb.	108 11/16	101	102	—
SOUTHERN				
Pref. Ord. ...	87	47⅞	69	—
Def. Ord. ...	21¾	9¼	16½	+1
5% Pref.	115	83	96½	+2
5% Red.Pref.(1964)	115½	98	97½	—
5% Guar. Prefce.	128½	106	108½	—
5% Red.Guar.Pref. (1957)	116	109½	109½	+1
4% Deb.	109¼	95	98½	+1
5% Deb.	129	117	113½	—
4% Red. Deb. 1962–67	107	101½	101½	+1
BELFAST & C.D.				
Ord.	4	3½	4	—
FORTH BRIDGE				
4% Deb.	102	99⅛	96½	—
4% Guar. ...	103¼	94½	94	—
G. NORTHERN (IRELAND)				
Ord.	5½	2½	3½	+¼
G. SOUTHERN (IRELAND)				
Ord.	25½	8½	9⅞	—
Prefce.	35	13	12¼	—
Guar.	70¼	30 15/32	30½	—
Deb.	83	56	51	—
L.P.T.B.				
4½% "A" ...	119⅝	107½	113½	+1
5% "A" ...	130	117	121½	+1
4½% "T.F.A." ...	108	98	103½	+½
5% "B" ...	122 13/16	105	114½	+1
"C"	84	68	77½	+2
MERSEY				
Ord.	24¼	16½	22	—
4% Perp. Deb. ...	102⅞	94¾	94½	—
3% Perp. Deb ...	77	69	66½	—
3% Perp. Prefce.	66½	57	55	—

CONTRACTS AND TENDERS

£1,500,000 Orders for L.N.E.R. Electric Coaches

The L.N.E.R. has placed contracts for the passenger coaches to be used on the lines now being electrified between Liverpool Street and Fenchurch Street and Shenfield, and between Manchester and Glossop. They will be of all-steel construction and of the open saloon type and will be fitted with electro-pneumatic doors which may be opened by the passenger pressing a button or may be controlled by the train staff. Contracts have been placed with the Metropolitan Cammell Carriage & Wagon Co. Ltd. for 100 60-ft. motor coaches and 100 55-ft. composite trailer coaches and with the Birmingham Railway Carriage & Wagon Co. Ltd. for 100 55-ft. driving trailer coaches. Orders have also been placed with the English Electric Co. Ltd. for 92 three-coach electric train equipments for the Liverpool Street-Shenfield trains, and with the General Electric Co. Ltd. for eight three-coach electric train equipments for the Manchester-Glossop trains. The total value of these orders is over 1½ million pounds. Work has been in progress for the last twelve months on both the Manchester-Sheffield scheme (of which the Glossop services form part), and on the Liverpool Street-Shenfield scheme. The Shenfield electrification will cater for an intensive suburban passenger traffic, whilst on the Manchester-Sheffield-Wath lines electric traction will be adopted for all classes of traffic, including a very heavy goods and mineral traffic. The two schemes together will cost more than six million pounds and they are being undertaken by the L.N.E.R. as Government Assistance schemes in accordance with the London Passenger Transport (Agreement) Act of July, 1935, and the Railways (Agreement) Act of December, 1935.

W. Wadsworth & Sons Limited has received a contract from the L.N.E.R. for eight electric goods lifts. These lifts will be installed on the platforms at King's Cross to form connections with a subway which is being constructed beneath the station leading to the new parcels depot (now approaching completion). Parcels barrows which at present obstruct the platforms will journey to and from the parcels depot by means of the new lifts and subway, leaving the platforms and concourse clear for passengers.

Fried. Krupp A.G. has received an order from the Bengal & North Western Railway Administration for the supply of 776 steel tyres for locomotives, carriages, and wagons, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Fried. Krupp A.G. has also received an order from the Rohilkund & Kumaon Railway for 432 steel tyres for locomotives, carriages, and wagons, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Canadian Wagon Orders

Orders for the manufacture of additional Canadian National Railways freight equipment to a total of 2,000 wagons, have been placed as follow: National Steel Car Company, Hamilton, Ontario, 725 box cars; Canadian Car & Foundry Co. Ltd., Montreal, 650 box cars; and the Eastern Car Co. Ltd., New Glasgow, Nova Scotia, 625 box cars. These cars are each of 40-ton capacity, steel-sheathed, and fitted with all approved standard safety devices.

The National Steel Car Corporation Ltd., of Canada has recently supplied two additional sleeping cars and a dining car to the 3-ft. 6-in. gauge Newfoundland (Government) Railway. These vehicles are modelled on the latest Pullman types of standard gauge in Canada, and were built at Hamilton, Ontario, whence they were shipped by rail and sea to Newfoundland.

Wagons for India

S. A. des Ateliers de Construction de Familleureux, through C. M. Hill & Company, has received an order from the Mysore State Railways for two bogie high-sided open wagons, type MBOC; four bogie low-sided open wagons, type MBO; and one bogie rail wagon, type MBE, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

The Egyptian State Railways Administration has recently placed the following orders:

H. J. Skelton & Co. Ltd.: Mild steel flat bars (Ref. No. E.S.R. 1.465, items 1–27 and 30–37, total price approx. £431, f.o.b. Liverpool, Middlesbrough, or Glasgow).

Trefileries & Laminoirs du Havre: Copper plates (Ref. No. E.S.R. 6.335, total cost approx. £516, f.o.b. Havre.)

North British Locomotive Co. Ltd.: Cylinders (Ref. No. E.S.R. 21.966, total cost £270, f.o.b. Glasgow).

Felton & Guilleaume: Cable (Ref. No. E.S.R. 35.2, total price £281, f.o.b. Antwerp).

Imperial Chemical Industries Limited: Sulphuric acid (Ref. No. E.S.R. 61.300, total price approx. £344, f.o.b. Liverpool).

P. & W. MacLellan: Mild steel bars (Ref. No. E.S.R. 1.495, total price approx. £709, f.o.b. Liverpool).

Westinghouse Brake & Signal Co. Ltd.: Point rodding (Order No. 24.261, total price £875, f.o.b. London).

S.A. Forges Usines & Fonderies de Haine St. Pierre: Cast steel axleboxes (Order No. E.S.R. 21.952, total cost approx. £335, f.o.b. Antwerp).

Indian Iron & Steel Co. Ltd.: 1,000 metric tons of pig iron (Ref. No. E.S.R. 306 G 3/10, total price £4,500, c.i.f. on lighters, Port Said).

North British Rubber Co. Ltd.: Rubber sheets (Ref. No. E.S.R. 47.38, total cost approx. £101, f.o.b. English port).

In connection with two orders recorded last week as having been placed by the South Indian Railway Administration the inspection work was wrongly accredited and the name of Messrs. Robert White & Partners should have been given as the consulting engineers concerned.

L.M.S.R. 1939 Locomotive Renewal Programme

The L.M.S.R. is to built in its own shops under the 1939 renewal programme 20 streamlined 4-6-2, 35 mixed traffic 2-6-0, 15 heavy freight 2-8-0 tender locomotives, 20 passenger tank locomotives, and 271 locomotive boilers.

Forthcoming Events

Mar. 18 (*Sat.*).—Stephenson Locomotive Society (Newcastle), at Y.M.C.A., Blackett Street, 6.30 p.m. "A Talk on the Stockton and Darlington Line," by Mr. J. Armstrong.

Mar. 20 (*Mon.*).—G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, Snow Hill Station, 6.30 p.m. Annual General Meeting.

Institute of Transport (Scottish), at North British Station Hotel, Edinburgh, 7.15 p.m. "Port Administration," by Mr. J. Hannay-Thompson.

Railway Students' Association, at London School of Economics, Houghton Street, W.C.2, 6 p.m. "Modernisation of Marshalling Yards and Shunting Methods on the L.M.S.R.," by Mr. T. W. Royle.

Mar. 21 (*Tues.*).—Institute of Metals (Swansea), at Y.M.C.A., 6.30 p.m. "Developments in Apparatus for Metallurgical Research," by Mr. J. Haughton.

Institute of Transport (Birmingham Graduate), at Chamber of Commerce, 6.30 p.m. "Modern Methods of Passenger Transport," by Mr. W. Whitwell.

Institute of Transport (Leeds Graduate), at City Transport Department, 7 p.m. "The Licensing Office of a Road Passenger Transport Undertaking," by Mr. W. Edwardes.

Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "The Responsibility of a Railway for Delay: should it be made more Precise?" by Mr. E. Brant.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "Reconstruction of Aldgate East Station," by Mr. J. Harley-Mason.

Institution of Locomotive Engineers (Manchester), at Literary and Philosophical Society, 36, George Street, 7 p.m. "Modern Locomotive Boiler Shop Practice," by Mr. E. Fell.

L.N.E.R. (York) Lecture and Debating Society, at Railway Inst., Queen Street, 6.45 p.m. Annual General Meeting and Presentation of Essay Competition Prizes.

Permanent Way Institution (Glasgow), at Royal Technical College, George Street, 7.15 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.

Mar. 22 (*Wed.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "Air Conditioning of Railway Passenger Stock," by Mr. A. Chilton.

Institution of Railway Signal Engineers, at Inst. of Electrical Engineers, Savoy Place, London, W.C.2, 6 p.m. "Safety and Design of Signal Circuits," by Mr. F. Bruce.

Permanent Way Institution (London), at Underground Railways' Dining Club, Pelham Street, S.W.7, 7 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox. Film: "Four Conventions: 1935, Glasgow; 1936, Plymouth; 1937, Southport; 1938, Cologne," by Mr. E. Tustain.

Mar. 23 (*Thurs.*).—Institution of Civil Engineers, at Grosvenor House, Park Lane, London, W.1, 7.15 for 7.45 p.m. Annual Dinner.

Mar. 24 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 6.30 p.m. Joint Meeting with Insts. of Civil and Electrical Engineers. "The Importance of a Training in Management for Engineers," by Mr. T. Rose.

Institution of Locomotive Engineers (Scottish), at Royal Technical College, George Street, Glasgow, 7.30 p.m. "Air Conditioning of Railway Carriages," by Mr. A. Chilton.

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.

Road and Rail Traffic Act, 1933.

Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The Procedure to be followed in regard to the inspection of the said Applications and the filing of Notices of Objections is that published in the *London Gazette* of 28th July, 1936.

Printed copies of the Procedure can be obtained from the Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2.

Notices of Objection to any of the said Applications must be filed on or before the 31st March, 1939

A copy of each Application can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, Fielden House, Great College Street, Westminster, London, S.W.1, price 1s. post free

T. J. D. ATKINSON,
Registrar.

9th March, 1939.

Number of Application	Name of Trader and General Description of Traffic
1939	
No. 133	ANGLIA MATCH CO. LTD., Letchworth, Herts; Matches, etc.
No. 134	ANGLO-SCOTTISH PETROLEUM CO. LTD., Straightsmouth, Greenwich, London, S.E.10; Lubricating Oil and Grease.
No. 135	ULTRA ELECTRIC LIMITED, Western Avenue, Acton, London, W.3; Wireless Apparatus, etc.
No. 136	THE SHREDDED WHEAT CO. LTD., Welwyn Garden City, Herts; "Shredded Wheat."
No. 137	C. KUNZLE LIMITED, Five Ways, Birmingham, 15; Chocolate, etc.
No. 138	MARSHALL FABRICS AND WELSH WARBURTON, 17, Minshull Street, Manchester; Dress Materials, Furnishings, etc.
No. 139	W. A. TURNER, "The Garden Factory," Stowmarket; Preserved Meat, etc.
No. 140	THE VICTORIA CREAMERY CO. LTD., Airdrie; Confectionery, etc.
No. 141	HURST & SANDLER LIMITED, Sandhurst House, Regent Street, Leeds, 2; Gowns, etc.
No. 142	ANDERSON'S RUBBER CO. LTD., Ander House, Victoria Street, Bristol; Clothing, etc.
No. 143	F. G. WIGLEY & CO. LTD., 103 and 104, Wood Street, London, E.C.2; Clothing, etc. (*Applicable also to traffic consigned by one Associated or Subsidiary Company.*)
No. 145	COLGATE-PALMOLIVE-PEET LIMITED, 44, Ranelagh Road, Grosvenor Road, London, S.W.1; Soap, etc.
No. 146	GOOCH'S LIMITED, Knightsbridge, London, S.W.3; Carpets, Drapery, etc.
No. 147	HURLINGHAM BUNGALOW CO. LTD., Peterborough Road, Fulham, London, S.W.6; Portable Buildings, etc.
No. 148	N. C. JOSEPH LIMITED, The Aluminium Works, Stratford-on-Avon; Aluminium Ware, etc.
No. 149	MORRIS MOTORS LIMITED, Morris Cowley, Oxon; "Iron Lungs."
No. 150	SIMPSON, WRIGHT & LOWE LIMITED, Sutton-in Ashfield; Hosiery.
No. 151	SOUTH VALE PAPER MILLS, Crickhowell, Breconshire; Paper.
No. 152	HENRY C. STEPHENS LIMITED, 57, Aldersgate Street, London, E.C.1; Stationers' Sundries, etc.
No. 153	STRATFORD-ON-AVON PRODUCE CANNERS LIMITED, Stratford-on-Avon; Canned Fruit and Vegetables, etc. (*Applicable also to traffic consigned by two Associated or Subsidiary Companies.*)
No. 154	THE WALL PAPER MANUFACTURERS LIMITED, 125, High Holborn, London, W.C.1; Paper Hangings, etc. (*Applicable also to traffic consigned by seventeen Associated or Subsidiary Companies.*)
No. 155	BURLEIGH LIMITED, Lewins Mead, Bristol; Coarse Paper, Stationery, etc. (*Applicable also to traffic consigned by one Associated or Subsidiary Company.*)
No. 156	CHAPMAN & DUNN LIMITED, 70, Dock Street, Newport (Mon.); Self-Raising Flour and Groceries.
No. 157	J. T. DOBBINS LIMITED, Crown Mills, Charlton Place, Ardwick Green, Manchester, 1; Cotton Waste and Rags, etc. (*Applicable also to traffic consigned by one Associated or Subsidiary Company.*)
No. 158	THE EMU WINE CO. LTD., Emu House, St. Leonards Street, Bromley-by-Bow, London, E.3; Returned Empties.
No. 159	HODGKINSON & GILLIBRAND LIMITED, Lower Bridgman Street, Bolton; Hosiery.
No. 160	JEYES' SANITARY COMPOUNDS CO. LTD., Richmond Street, Plaistow, London, E.13; Disinfectants, etc.
No. 161	ALEXANDER SLOAN & CO. LTD., 45, Bridge Street, Glasgow, C.5; General Stores Wares, etc.

Number of Application	Name of Trader and General Description of Traffic
1939	
No. 162	G. & J. STUBLEY LIMITED, Batley; Textiles.
No. 163	A. H. TUCKER & CO. LTD., Wallbridge Mills, Frome; Cloth, Wool, etc.
No. 164	BOOTH'S DISTILLERIES LIMITED, 83, 84 and 85, Turnmill Street, London, E.C.1; Wines and Spirits, etc.
No. 165	ELLIOTTS OF NEWBURY LIMITED, Albert Works, Newbury; Chairs in returnable cartons. (*Applicable also to traffic consigned in the name of Littlewood's Mail Order Stores Limited.*)
No. 166	ELLIOTTS OF NEWBURY LIMITED, Albert Works, Newbury; Chairs in non-returnable cartons. (*Applicable also to traffic consigned in the name of Littlewood's Mail Order Stores Limited.*)
No. 167	THOS. MARSHALL & SON LTD., Wellington Bridge, Leeds, 12; Iron or Steel Cisterns, etc.
No. 168	JOHN BROWN & SON LTD., 111, French Street, Glasgow, S.E.; Textiles. (*Applicable also to traffic consigned by one Associated or Subsidiary Company.*)
No. 169	CARTER & PARKER LIMITED, Gordon Mills, Guiseley, near Leeds; Knitting Wool, etc.
No. 170	HOOD'S DAIRY PRODUCTS LIMITED, 86, Cadogan Street, Glasgow, C.2; Ice Cream and Dry Ice.
No. 171	LEWIS & CO. (CLOTHIERS) LTD., Globe Road, Leeds, 11; Clothing.
No. 172	MILLER'S (BUTCHERS) LIMITED, 165, Irish Street, Dumfries; Rabbits (dead).
No. 173	PRESTON, BROOKE & CO. LTD., Elmwood Mills, Camp Road, Leeds, 7; Clothing, etc.
No. 174	WATSON BROTHERS, Fairfield, Hebden Bridge, Yorks; Day-old Chicks, Poultry, etc.
No. 175	B. BERWIN LIMITED, Berbourne House, Roseville Road, Leeds; Clothing.
No. 176	LACRINOID PRODUCTS LIMITED, Gidea Park Works, Stafford Avenue, Gidea Park, Essex; Bakelite Ware.
No. 177	ALEXANDER SLOAN & CO. LTD., 45, Bridge Street, Glasgow, C.5; Clothing, Drapery, etc.
No. 178	JOHN SMEDLEY LIMITED, Lea Mills, near Matlock, Derbyshire; Hosiery, etc.
No. 179	A. OAKDEN & SONS LTD., 86–90, Curtain Road, London, E.C.2; Hardware, Electric Appliances, etc.
No. 180	LISSEN LIMITED, Angel Road, Edmonton, London, N.18; Accumulators, Wireless Apparatus, etc. (*Applicable also to traffic consigned by one Associated or Subsidiary Company.*)
No. 181	R. LEHMANN & CO. LTD., Peninsular House, Monument Street, London, E.C.3; Condensed Milk, Preserves and Provisions, etc.
No. 182	THE NOTTS HOSIERY CO. LTD., 44 and 44a, Gutter Lane, Cheapside, London, E.C.2; Hosiery.
No. 183	W. G. WHITE & CO., 7, Love Lane, Wood Street, London, E.C.2; Clothing, etc.
No. 184	NORFOLK CANNERIES LIMITED, Victoria House, Bloomsbury Square, London, W.C.1; Fruit and Vegetables, etc.
No. 185	THE KIDMAR HOSIERY CO. LTD., 388, Swanston Street, Bridgeton, Glasgow, S.E.; Hosiery, etc.
No. 186	BALLITO HOSIERY MILLS LIMITED, Hatfield Road, St. Albans; Hosiery, etc.
No. 187	BRADFORD TEXTILE CO. LTD., St. Blaize Works, Snowden Street, Bradford, Yorks; Clothing and Caps.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following posts:—

M/8304 ASSISTANT ENGINEER

required by the Kenya and Uganda Railways and Harbours for one tour of 24-48 months' service with prospect of permanent employment. Salary £480 rising to £840 a year. Free passages and quarters and liberal leave on full salary. Candidates, age 25-30, must be Corporate Members of the Institution of Civil Engineers or possess an Engineering Degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination and should preferably have had some experience on Railway Civil Engineering work.

M/6607 SECTION ENGINEER

required for the Nigerian Government Railway for two tours each of 12-24 months, with prospect of permanency. Salary £475—£840 a year. Free passages and quarters and liberal leave on full salary. Candidates, age 23-35, should be Corporate Members of the Institution of Civil Engineers or possess an Engineering degree recognised as granting exemption from Sections A and B of the A.M.I.C.E. examination, and have had practical experience in bridge and reinforced concrete construction. Candidates who are students of the Institution of Civil Engineers and have had the requisite practical experience, are also eligible for consideration.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting the reference number against the appointment for which application is made.

London and North Eastern Railway Company

NOTICE is hereby given that, for the purpose of preparing the warrants for Interest payable on the 15th April, 1939, on the Company's 5 per cent. Redeemable Debenture Stock, the balance will be struck as at the close of business on 27th March, and such Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the 5 per cent. Redeemable Debenture Stock should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5.0 p.m. on 27th March.

By Order,
P. J. DOWSETT,
Secretary.

Marylebone Station,
London, N.W.1.
17th March, 1939.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for:—

60 STEEL TYRES FOR LOCOMOTIVES—BROAD GAUGE.

Specification and Form of Tender can be obtained at the Company's Offices, 123, Victoria Street, Westminster, London, S.W.1.

Fee 10s. 6d., *which will not be returned.*

Tenders must be submitted not later than 2.00 p.m. on TUESDAY, 18TH APRIL, 1939.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
V. CRASTER,
Secretary.

XUM

Railway Share Market

As was to be expected, the latest developments in European political affairs have checked the upward movement of values on the Stock Exchange. Profit-taking was fairly general, but no heavy selling was reported and the undertone of markets was described as much firmer than might have been anticipated.

More hopeful views as to the general trade outlook and the further improvement disclosed by the past week's traffics assisted sentiment in regard to home railway securities, although they were not immune from the easier trend of markets and the movement to lower prices in evidence this week. Moreover the assumption is that negotiations in regard to the "Square Deal" are now making better progress.

Great Western ordinary stock developed a steadier tendency at 29¾ in response to the past week's traffics, which show a decline of only £7,000, and the 5 per cent. preference was in request up to 85. The 4 per cent. debentures were quoted at 99 and the 5 per cent. guaranteed stock at 105. L.M.S.R. stocks also showed a firmer tendency following publication of the traffics, which in this case record a decrease of £44,000, but were better than had been generally anticipated. The ordinary stock transferred around 14, the 4 per cent. preference around 56½, and the 1923 preference around 37. The market is now taking the view that, unless there is a set-back in general trade conditions, there is a reasonable prospect of the 1923 preference returning to the dividend list in respect of the current year. L.M.S.R. 4 per cent. guaranteed stock was steady at 86, as were the 4 per cent. debentures at 94. Southern preferred fluctuated moderately and changed hands up to 70, while the deferred was around 16¾, the 5 per cent. preference 96½ and the 4 per cent. debentures 98½. L.N.E.R. first and second preference reacted sharply at one time, but later showed a better tendency at 32 and 13 respectively. Fluctuations were also shown by the first and second guaranteed, which, however, subsequently became firmer at 75 and 63½ respectively. London Transport "C" stock was favoured on the assumption that the forthcoming increase in fares will improve dividend prospects.

Better traffic receipts assisted most of the leading stocks of Argentine railway companies, but prices were lower on balance in sympathy with the general trend on the Stock Exchange. Central Argentine preference stocks attracted rather more attention, but B.A. Great Southern Stocks were out of favour. San Paulo ordinary stock and Leopoldina debentures came in for profit-taking following their recent improvement. Antofagasta preference stock was moderately lower. Movements in New York Central, Atchison and most of the more active American railway shares were adverse to holders in sympathy with the trend of Wall Street markets. Canadian Pacific common shares were little changed at 5¼, a small improvement was recorded by the preference stock, despite the disappointing showing of the preliminary results for the past year's working. Further consideration brought in sellers.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1938-39	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1938	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1938	Prices: Lowest 1938	Prices: Mar. 15, 1939	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	12.3.39	15,130	– 2,830	10	130,550	173,420	– 42,870	Ord. Stk.	14	7¼	8½	Nil
	Argentine North Eastern	753	11.3.39	8,455	+ 924	37	353,876	340,448	+ 13,428	,,	4	2	4	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	6½	2	4	6½
	Bolivar	174	Feb., 1939	3,700	+ 200	8	7,100	7,100	—	6 p.c. Deb.	82	75	72½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	8	7	7	Nil
	Buenos Ayres & Pacific	2,806	11.3.39	115,074	+ 3,411	37	3,077,672	3,182,696	– 105,024	Ord. Stk.	10	4	6½	7 11/16
	Buenos Ayres Central	190	25.2.39	$61,300	– $26,700	35	$3,674,500	$4,236,600	– $562,100	Mt. Deb.	6½	3¼	4	Nil
	Buenos Ayres Gt. Southern	5,082	11.3.39	187,407	– 11,600	37	5,210,235	5,503,968	– 293,733	Ord. Stk.	15 15/16	8½	11	Nil
	Buenos Ayres Western	1,930	11.3.39	54,467	+ 6,824	37	1,611,476	1,681,390	– 69,914	,,	12¾	5	8½	Nil
	Central Argentine	3,700	11.3.39	131,405	+ 24,150	37	4,251,842	4,584,974	– 333,132	,,	13¼	5¾	10	Nil
	Do.	—	—	—	—	—	—	—	—	Pfd.	5	2½	4	Nil
	Cent. Uruguay of M. Video	972	4.3.39	20,414	+ 171	36	656,014	642,949	+ 13,065	Ord. Stk.	3	1¼	1½	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	3¾	¾	2½	Nil
	Costa Rica	188	Jan., 1939	16,626	– 6,724	31	155,492	178,556	– 23,064	Stk.	28	22½	22½	8⅞
	Dorada	70	Feb., 1939	12,800	– 1,900	8	26,100	32,400	– 6,300	1 Mt. Db.	105¼	104	103½	5 15/16
	Entre Rios	810	11.3.39	14,280	+ 850	37	573,210	534,430	+ 38,780	Ord. Stk.	7¼	3½	5	Nil
	Great Western of Brazil	1,092	11.3.39	10,200	+ 2,400	10	115,100	91,900	+ 23,200	Ord. Sh.	3/-	1/-	¼	Nil
	International of Cl. Amer.	794	Jan., 1939	$548,273	+ $61,132	4	$548,273	$487,141	+ $61,132	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	6d.	6d.	½	Nil
	La Guaira & Caracas	22¾	Feb., 1939	4,655	– 315	8	9,405	9,580	– 175	Stk.	8	6½	7½	Nil
	Leopoldina	1,918	11.3.39	19,074	+ 1,179	10	207,783	195,235	+ 12,548	Ord. Stk.	4	1	2	Nil
	Mexican	483	7.3.39	$338,500	+ $15,300	9	$2,888,800	$3,009,400	– $120,600	,,	¼	1/16	⅛	Nil
	Midland of Uruguay	319	Feb., 1939	9,048	– 1,572	35	73,489	75,972	– 2,483	,,	7/8	½	½	Nil
	Nitrate	386	28.2.39	5,084	– 1,495	8	19,202	31,326	– 12,124	Ord. Sh.	52/9	19/16	15/8	6⅛
	Paraguay Central	274	4.3.39	$2,745,000	– $126,000	36	$108,232,000	$112,120,000	– $3,888,000	Pr. Li. Stk.	60	55½	47½	12⅝
	Peruvian Corporation	1,059	Feb., 1939	61,801	– 10,736	35	539,567	660,322	– 120,755	Pref.	5¾	1¾	2½	Nil
	Salvador	106	4.3.39	¢28,500	– ¢2,500	36	¢742,964	¢709,625	+ ¢33,339	Pr. Li. Db.	23	20	19½	Nil
	San Paulo	153½	5.3.39	28,200	+ 1,158	9	249,776	289,271	– 39,495	Ord. Stk.	64	28	31½	12 1/16
	Taltal	160	Feb., 1939	3,010	+ 1,170	35	23,795	30,670	– 6,875	Ord. Sh.	15/16	½	½	10
	United of Havana	1,353	11.3.39	51,978	– 4,083	37	771,771	850,089	– 78,318	Ord. Stk.	3⅝	½	1	Nil
	Uruguay Northern	73	Feb., 1939	789	– 255	35	8,250	7,481	+ 769	Deb. Stk.	2	1	2	Nil
Canada	Canadian National	23,772	7.3.39	650,927	+ 2,002	9	5,963,883	5,971,195	– 7,312	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	72	60	71½	5⅝
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104	90	99½	4
	Canadian Pacific	17,186	7.3.39	476,600	+ 1,800	9	4,255,600	4,414,400	– 158,800	Ord. Stk.	8 7/16	4¼	5½	Nil
India†	Assam Bengal	1,329	20.2.39	48,330	+ 8,602	48	1,353,567	1,240,317	+ 113,250	Ord. Stk.	81½	70	75½	4
	Barsi Light	202	20.2.39	2,692	– 975	48	124,485	124,402	+ 83	Ord. Sh.	60½	54¼	55½	7 5/16
	Bengal & North Western	2,108	28.2.39	70,914	+ 1,505	22	1,218,161	1,170,762	+ 47,399	Ord. Stk.	311	278	264	6 13/16
	Bengal Dooars & Extension	161	28.2.39	2,672	– 1,026	49	137,855	135,568	+ 2,287	,,	89	83	87§	7 7/16
	Bengal-Nagpur	3,272	20.2.39	216,075	– 8,470	48	6,246,416	6,287,058	– 40,642	,,	95½	90	93½	4¼
	Bombay, Baroda & Cl. India	3,085	10.3.39	240,300	– 48,600	50	8,286,150	8,401,200	– 115,050	,,	112 7/16	95	107½	5 9/16
	Madras & Southern Mahratta	2,967	20.2.39	171,900	+ 13,498	48	4,994,839	4,718,204	+ 276,665	,,	109	97	101½	7⅜
	Rohilkund & Kumaon	571	28.2.39	12,565	– 2,273	22	225,467	226,780	– 1,313	,,	308	285	275	6 9/16
	South Indian	2,531¾	20.2.39	109,982	– 3,343	48	3,652,817	3,734,033	– 81,216	,,	104	101	101½	4 5/16
Various	Beira-Umtali	204	Jan., 1939	76,317	– 3,514	17	326,567	356,561	– 29,994	—	—	—	—	—
	Egyptian Delta	620	20.2.39	5,575	+ 21	48	203,097	215,165	– 12,068	Prf. Sh.	7/8	5/6	½	Nil
	Kenya & Uganda	1,625	Feb., 1939	253,899	– 1,712	8	503,301	539,655	– 36,354	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	49	41	43½	9 5/16
	Midland of W. Australia	277	Jan., 1939	14,947	+ 1,305	31	107,233	97,977	+ 9,256	Inc. Deb.	93¾	89	93	4¼
	Nigerian	1,900	28.1.39	55,013	– 5,634	44	1,742,564	2,388,379	– 645,815	—	—	—	—	—
	Rhodesia	2,442¾	Jan., 1939	339,253	– 53,949	17	1,511,391	1,710,441	– 199,050	—	—	—	—	—
	South Africa	13,285	18.2.39	609,594	– 7,448	46	28,810,214	29,861,930	– 1,051,716	—	—	—	—	—
	Victoria	4,774	Dec., 1938	859,188	– 55,580	26	4,733,741	4,747,229	– 13,488	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over estimated. The statements are based on the current rates of exchange and not on the par value